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The Treatment of Pulmonary Tuberculosis

A HISTORY of the treatment of pulmonary tuberculosis, or clinically, of consumption, would afford an interesting study of human endeavor and would often prove both amusing and distressing. If it could be truthfully said that whatever can make us ill has been brought forward as a cause of consumption, we might with equal truth assert that whatever can make us well has been praised as a cure for consumption.

From ancient Hindu times, when the Ayur Veda of Susruta gave minute dietetic, hygienic and therapeutic instructions for the care and treatment of consumptives, to the present day, with its outdoor sleeping, its stuffing, its rattlesnake venom and its tuberculins (in the widest possible acceptation of the term) there is a far cry, and many are the methods, innumerable the remedies which have been proposed, lauded, condemned and forgotten. Through them all there runs a red thread, fine and delicate after its very first appearance in ancient Hindu lore; almost, and often quite, lost sight of throughout the middle ages, but becoming stronger since the middle of the last century and now recognized as of paramount importance; and that is the important fact that we must treat consumptives more than consumption. While Susruta gave detailed and careful directions for the general and more particularly the dietetic management of phthisical patients, Hippocrates had already described a multiplicity of remedies simply as being "good for consumption," and the writers of the middle ages employed a terrifying pharmacopeia which after all was of little more than symptomatic use.

Although the importance of outdoor life had been emphasized occasionally (in our country especially by Benjamin Rush), it was only with Bodington in England, and still more with Hermann Brehmer in Germany that not only the beneficial effect of open-air life was demonstrated, but that efforts were being directed particularly to the improvement of the nutrition and of the general condition of consumptive patients. Dr. Brehmer, in spite of all ridicule and opposition, demonstrated the soundness of his claims and the sanatorium movement may be said to have originated from his efforts.

The discoveries and attainments of the bacteriological era which commenced with Pasteur and Koch did not change as much as they explained and confirmed the value

of Brehmer's mode of treatment. The purpose of all therapy in tuberculosis was found to be the improvement of the patient's nutrition, and therewith of his power to resist the pathogenic action of the tubercle bacillus and its toxins, as well as of concomitant mixed infections and intoxications. Even the specific treatment, however great its value and importance undoubtedly is, can at best produce or increase the specific resistance, and this cannot be of much use if the nutrition of the patient is feeble. For this reason the administration of tuberculin and of kindred remedies is very properly postponed in patients with progressive debility until this may have been at least arrested and the nutrition improved.

As we have indicated, of the remedies and methods lauded for the symptomatic treatment of consumption there is no end; but while it is proper and necessary to relieve the symptoms of the disease as they arise, we must not forget and neglect the underlying condition. Our treatment of consumptives will be the more successful the more we can improve their nutrition and general resistance, for it is these that furnish the substances which produce a specific resistance or an immunity.

"Poverty," says Hunter, "is an incentive to push." And push opens all doors.

HAVE A PUBLICITY COMMITTEE

I have long felt that the medical profession should show more interest in and activity concerning the welfare of the community, looking at it from a medical standpoint. Here is work for our local medical societies. There should be a publicity committee in every one, whose duty it should be to tell the people through the local press and by occasional open lectures or series of lectures of a popular character, something about medical progress, and what the profession and its scientific workers are trying to do and really accomplishing for the public good.

Isn't it better for us doctors to do this work ourselves than to leave it for laymen to try to do, often in a half-hearted, sensational or inaccurate way, through the lay magazines and fad publications of all kinds? Not only can we throw light on the essentials of hygiene and sanitation, tell how diseases are spread and how they may be prevented, and what the individual may do and should do to keep well; but we can also explain the fallacies of the faddist and charlatan, tell of the methods of quacks and lead people to a knowledge of the dangers and delusions of the patent-medicine evil. And in so doing we may protect ourselves, add to our strength in the community, and what is of greatest importance, make ourselves of the greatest value to humanity.

"No man liveth to himself alone." The medical man should realize this as much as any man—more than most. His duty does not begin and end with the healing of the sick and the "banking" of the profits therefrom. The law of life is the law of service. A doctor is a teacher. Isn't it time to begin to begin to teach, utilizing for this purpose the really magnificent organizations which are already at our hand, and awaiting utilization?

SHALL WE SURRENDER?

Dr. Watson's letter, in another department, voices the views of a vast number of physicians. It places before the profession a condition that must be realized and a question that must be settled.

Many a physician is thoroughly disgusted with drug medication. So is the public. So are the upper elements of the medical profession—and about five-tenths are comprised in the "upper elements."

It is not necessary to expatiate. Stripped of their mystery, viewed in the light of modern science, judged by the standards of modern times, based on utility proved and comprehended, the old drugs are trash. What need of calling the long roll of their imperfections: uncertain, variable, decomposable, often inert and that just when most needed, vile to the taste and loathsome to the stomach—truly it is less marvelous that we have flung them overboard than that we put up with them so long. The memory of

the times when we saw the lives entrusted to us go out, when these broken reeds gave way, is one we would fain blot out if we but could. The patients who left us because, face to face with their ailments, we were unable to do ought but "try things," is still exasperating, though it is now ancient history.

And yet it is all our own fault. The thing is so simple! Drugs contain principles that exert some influence over the functions of the human body. We have lacked the ability to utilize them properly; and child-like, we abuse the drugs instead of acknowledging our own ineptness. The active principles of drugs are not in themselves variable, uncertain or doubtful; each of them exerts invariably the same effect in the same doses. The trouble lies in the use of crude preparations, containing these active principles in variable and uncertain percentages and proportions. When extracted from the mother-plant and presented singly in chemical purity we have an arsenal of perfect weapons at our hands, and all that is needed is the knowledge and skill to apply them—the *scientia et ars medendi.*

These active principles have been thus prepared; they have been studied by administration to animals, to healthy men and to sick men. Their action has been worked out with all the precision of modern science. The deductions from these studies have been submitted to clinical tests and corrected by that final proof. Nothing is left to chance, to psychic influence, to the mysterious unknown. So many of these admirable tools have been proved that active-principle therapeutics has grown to be a method, and would have developed into a school had its sponsors been less ethical. It has developed strictly within the lines of the profession. It is our own child, our own flesh and blood; and yet we treat it like a step-child.

What children we are! The touch of mystery attracts us, as does the foreign. We jump at an idea or a drug imported from Germany, when the same thing produced at home would not interest us, beyond a sense of jealousy that makes us resent our neighbor's propositions as naturally as we welcome the foreigner's. The active-principle movement being perfectly legitimate, a natural advance made by ourselves, based on work done by the medical profession in natural course of development, is too matter-of-fact for us, and we look outside.

Innumerable men who are sublimely ignorant of medicine, or of the human body, who know too little to distinguish the backbone from the esophagus, from the depths of their ignorance propose new methods of treatment. They make claims which similarly ignorant people accept as true and their methods acquire popularity. And we—accept them! We are ready to accept anything that will catch the public. So we allow the impression to become fixed that all the advances in therapeutics come from the outsiders, the quacks, and that the regular medical profession is incapable of developing anything for itself, but must be driven into unwillingly adopting the methods devised outside its ranks. But by the time we get ready to take up one of these the novelty is gone, the public is getting tired of it, the quack has reaped his harvest and is off on the trail of something else. Meanwhile we have accumulated a varied assortment of highly expensive—junk.

Now, as ever, we find ourselves facing the question, shall we desert to the enemy? Shall we give up all the results of good, honest work done by the medical profession during its long existence, and acknowledge its worthlessness, giving quackery our endorsement again?

Why should we, when we have this magnificent development of the resources we have been studying so long? The case is simple—there exist in plants and animals many remedial agents, principles each of which exerts an influence over one or other of the vital functions of the human body. These functions are deranged by disease, being either lowered or elevated. By applying these active principles to exactly counteract the influence of disease, we raise the depressed functions and lower the excited ones, until we restore that physiologic harmony we know as health. This we can do by the use of our drugs, with a precision not

to be obtained from any other therapeutic resource—quickly, surely, agreeably, and inexpensively; with the least possible interference with the patient's physical economy.

No, I am not ready to surrender. Take you your quackery and I'll take my active principles; and in nine cases out of ten I will beat you.

My message in its fashion shall be an appeal to enthusiasm in things in life, a call to do things because we love them, to love things because we do them, to keep the eyes open, the heart warm and the pulse swift, as we move across the field of life.—David Starr Jordan.

ON THE DANGER OF TUBERCULOUS INFECTION FROM CONSUMPTIVES

Physicians who come in daily contact with tuberculous patients, are all too often told of petty persecutions which these patients have to undergo on account of their disease. Health boards, societies and individuals wishing to establish sanatoria for the treatment of tuberculous diseases are greatly handicapped in their endeavors by the fear of people living in the neighborhood of the selected locations, lest the consumptive patients who are to congregate in the planned institutions, should scatter the dreaded infection broadcast and render the entire neighborhood tuberculous.

A little sober reflection should suffice to show the absurdity of this excessive fear of contagion, especially if we consider that we expose ourselves fearlessly, perhaps because often we do so unknowingly, to a far more dangerous infection by much worse diseases by daily contact with persons whom we do not know, in crowds, in stores, in street cars.

Again, it is a matter of common observation that after an attack of scarlet-fever, of diphtheria, of measles or whooping-cough in a house, this is only disinfected because of the stringent regulations of the Board of Health, and that we are not afraid of associating with persons afflicted with such diseases, perhaps with the exception of scarlet fever and diphtheria, although all these diseases are as a matter of fact far more contagious than is tuberculosis.

Whence arises this strange and unreasoning fear? It is peculiar especially to the laity. Physicians are not often fearful of contagion for themselves. Still it may be proper to discuss the matter in this place, if only to call the attention of the readers of CLINICAL MEDICINE to the best way of contradicting and controverting the error.

The idea that consumption may be transmitted from person to person is old, and has been handed down from antiquity. Until the latter half of the last century it had always been more or less successfully denied and the transmission of the disease by heredity was most forcibly insisted upon.

In the sixties of the last century, when Villemin demonstrated to the French Academy of Medicine the infectious nature of tuberculosis, his conclusions became subjected to the most violent and heated contradiction. But in 1882, when Prof. Koch announced in the tubercle bacillus the ultimate cause of tuberculosis, he left nothing to be explained or to be contradicted. His demonstration was complete and finished, and his announcement could only be accepted as a fact. This fact, that the disease leading to phthisis was due to the introduction into the body of a microorganism, and that the source of this microorganism lay in those afflicted with the disease, in whom it lived and multiplied and by whom it was discharged into the open air, led as a matter of course to manifold attempts to prevent such transmission. The science of the prevention of disease, hitherto barely more than empirical, became a science indeed and may be said to have commenced, like bacteriology, with Pasteur's and Koch's discoveries.

It goes without saying that the consequence was soon drawn: If consumptives scatter tubercle bacilli, and if tubercle bacilli produce tuberculosis, the thing to do is to avoid coming in contact with tubercle bacilli; in short to avoid consumptives. More: The struggle against tuberculosis, which soon was to assume a world-wide scope, and in which physicians, business

men, clergymen, social workers and intelligent laymen, all alike took part was of course directed against the deadly tubercle bacillus. Hence the leaflets and pamphlets which were, and still are, distributed broadcast. But, unfortunately, in many, very many instances, the struggle against tuberculosis degenerated into a struggle against the tuberculous, and thus much harm was done and many innocent patients were wronged.

Now, the struggle against tuberculosis is all right and proper, but we must not, to use the expressive German saying, "throw out the child with the bath water." Fighting against the further dissemination of tuberculous infection we must not harass and handicap the victims of the disease, they are sufficiently distressed as it is. We should above all teach our apprehensive clients, as well as their fussy sisters and cousins and aunts, that a consumptive who is clean in his person and careful in the disposal of his discharges is in no manner a danger to his surroundings. Teach your patients not to breathe, or talk, or cough into people's faces, not to kiss ANYBODY on the lips, to hold bits of muslin or of tissue paper which can be burned before the mouth and to use them as receptacles for the expectoration. Teach them never to spit on the floor, on the sidewalk, or anywhere where people congregate, and they will not transmit infection to others.

We may also impress our apprehensive clients with the fact that a simple contact with consumptives does not suffice to produce an infection. If it did, the world would have been depopulated ages ago. Long and intimate contact with and repeated inhalation of virulent tubercle bacilli are necessary, and even then the subject of such exposure may escape because his individual resistance is sufficient to render the infection inert, to make it latent. Infection without subsequent disease occurs in the majority of persons reaching puberty, while only about twelve percent of all living die of consumption.

Of course the careless consumptive we must teach and watch, and if he be unteachable we may and must shun him; but the clean, careful consumptive is not a source of danger and need not be avoided.

Don't flinch, flounder, fall over, nor fiddle, but grapple like a man. A man who wills it can go anywhere, and do what he determines to do.—John Todd.

THE TONSILLAR ORIGIN OF SO-CALLED RHEUMATIC AFFECTIONS, INCLUDING TUBERCULOUS RHEUMATISM

Dr. Paul Schichhold (*Muench. Med. Woch.*, 1910, Feb. 8, p. 281) refers to the fact that as early as 1894 the German imperial report on military sanitation had raised the question as to whether there is in many instances a direct causal connection between tonsillitis and articular rheumatism. This idea was not followed up until in 1904 and 1905 Dr. Guerich published several communications in which he showed that tonsillitis does not form the beginning or primary lesion of articular rheumatism, but that the latter affection is produced through pus from tonsillar lesions entering the circulation. As to this, however, it was later claimed by Chvostek and Singer that it is not the pus-bacteria themselves but their toxins that give rise to these symptoms. In support of his contention Guerich not only demonstrated pus in the tonsils of rheumatics, but he succeeded in permanently curing ninety-eight out of one hundred and twenty-five cases by the tonsillar treatment which he had formulated upon the basis of his findings.

Schichhold himself has treated some seventy cases after Guerich's method. He has found pus in the tonsils in the great majority of his cases of articular rheumatism, although sometimes only after careful quest. In order to locate the pus-pockets, the anterior pillars of the fauces must be fully drawn back and the tonsils searched in all directions with a hollow probe. Schichhold found as much as one and two cubic centimeters of pus in tonsils which had never caused any symptoms whatever.

The causal treatment of articular rheumatism, consequently, is evident and consists in removing as completely as possible the diseased tonsil. In place of enucleation,

which is a difficult operation and not without danger, the author prefers the successive ablation of portions of the gland, if necessary in two or three sittings, after the pus-pockets have been slit open, and the pus has been evacuated. Tonsillotomy is insufficient because it removes only a portion of the tonsil and is very apt to leave large pus-sacs in the remaining basillar portion.

The acute symptoms diminish almost immediately, and the patients steadily improve, except for a slight "reaction" on the second or third day, which, however, lasts only a day or two. Schichhold has seen not only acute cases of acute articular rheumatism healed promptly and permanently by removal of the tonsil, but he has also seen recent cardiac complications disappear. He concludes from the results of his investigations:

1. The cause of socalled rheumatic diseases lies in the pus which fills the tonsillar crypts and which may enter the circulation and produce specific symptoms. Aside from the tonsils other organs may become the origin of such diseases if they are the seat of pus collections.

2. A complete cure, and especially the prevention of relapses, is possible only by the completest removal of the tonsils. All measures which result only in partial removal, especially tonsillotomy, are entirely useless for securing permanent relief.

3. Aside from the joint affections, complications are also influenced favorably; cardiac complications, however, are only thus affected if of recent origin.

4. Tonsillar treatment appears to have a favorable influence upon other diseases in which enlarged tonsils are found, especially on kidney diseases.

These experiences of Guerich and Schichhold, it occurs to us, possibly may afford the proof of the theory which Prof. A. Poncet has advanced so persistently for more than a dozen years, to the effect that there exists a tuberculous form of articular rheumatism.

It has long been asserted by Ribbert, Aufrecht and others, that the tonsils are the first localization of tuberculous infection and that from here it is carried into the body. It has been shown that tubercle bacilli may be arrested in the crypts and in the tissue of the tonsils, where they find favorable conditions for growth and consequently for the formation of toxins. It has also been shown, for example by Baumgarten, that the tubercle bacilli themselves are capable of causing suppuration. Nothing, therefore, seems simpler than to assume that tuberculous toxins are carried from the tonsils into the circulation and that they cause tuberculous arthritis in like manner as other forms of acute arthritis are produced by other toxins.

We shall be interested, indeed, to learn whether Dr. Poncet will accept these findings as a support of his theory, for which he has so far been able to afford only clinical proof.

No one can acquire a fortune unless he makes a start; and the habit of thrift, which he learns in saving his first hundred dollars, is of inestimable value later on. It is not the money, but the habit which counts.—

—Darius Ogden Mills.

DIGITALIS AND DIGITALIN

Here is a fact that not everyone knows, but which is of considerable interest to every physician who uses digitalis in some form —and who does not? There is a shortage in the crop of the English leaves of digitalis; as a matter of fact it has been found practically impossible, for some time, to secure any of this drug of good quality. There is, to be sure, an abundance of digitalis on the market; but the American-raised leaves are of little therapeutic value and the German drug is not much better. As a result of this shortage, it has been exceedingly difficult and it is now almost impossible to secure digitalin, and other digitalis principles. The sources of supply, American and foreign, have been raked and scraped from one end to the other, but the digitalis (the good kind) and its active principles are not to be had.

Have you heard of this before? Have your prescriptions for the tincture or infusion of digitalis been held up? We have not heard of any physician being put to inconvenience on this account. Then what are

the doctors' patients getting? The natural conclusion is, that in the absence of an adequate supply of the English leaves the market is being supplied with the American or German "hay"—since from the standpoint of activity, "drug" it can hardly be called. The new English crop will soon be here—probably sometime in July; but till then the patients of careless physicians who prescribe their remedies through careless pharmacies, are likely to suffer.

Digitalin is not sophisticated, though it may vary in quality. Get it if you can, of someone who has provided for the future—though even these may run short—but meanwhile learn the adaptabilities of other drugs of similar action. Now is a good time to study sparteine sulphate, adonidin, strophanthin, convallamarin, and other excellent heart tonics, which too often we pass by without even considering, simply because digitalin has become the almost universal panacea for heart disease.

DIPHTHERIA AND TUBERCULOSIS

In one of the recent *Bulletins* of the Chicago Department of Health there is an instructive map showing the distribution of diphtheria. Of this disease 917 cases were reported in one month. The map shows that these are gathered around certain foci, the worst being in the bend of the river above the beginning of the drainage canal. South of the stockyards another considerable group is recorded, beside which there is a sprinkling of the disease in single outbreaks and groups over every ward in the city. The sad part of it is that this disease is preventable and could be stamped out of existence by proper hygienic measures.

Diphtheria is a disease of houses. It clings to those where the hygienic conditions are especially bad, and no precautions will avail to prevent it in such localities. It demands that the premises must be put in absolutely hygienic condition, and if this were done the disease would soon become extinct.

In the *Bulletin* of the St. Louis Tuberculosis Commission a few months ago there was a suggestive scheme showing the proportion of deaths due to each of the principal causes of mortality. Out of all the deaths in that city over 11 percent are due to tuberculosis, a little less than 10 percent to pneumonia; heart disease, violence, bowel trouble and kidney diseases coming next in the order named.

It is sad to note how many deaths are due to preventable causes, tuberculosis ranking first among these. Truly, when one sees such evidences of the universal ignorance and neglect of hygiene, it is difficult to account for physicians being idle. If each of us understood our obligations in the way of inculcating proper hygiene among the community in which we live, there would be little of idle time on our hands.

Gaze thou in the face of thy brother, in those eyes where plays the lambent fire of kindness, or in those where rages the lurid conflagration of anger; feel how thy own so quiet soul is straightway involuntarily kindled with the like, and ye blaze and reverberate on each other, till it is all one limitless, confluent flame (of embracing love, or of deadly, grasping hate); and then say what miraculous virtue goes out of man into man.—Carlyle.

ETHICS AND THE ACTIVE PRINCIPLES

Once in a while we receive a letter from our friends stating that his advocacy of the active principles and the methods based thereon seems to arouse a certain degree of suspicion on the part of his professional brethren, who appear inclined to stand aloof from him on account of his advocacy of these remedies. This is a matter which appears to us so important that we deem it wise to devote some space to its consideration.

There is little wonder that the profession at large should assume this attitude. The inroads made upon the profession by the many sects, fads and delusions that have arisen are calculated to make any of us suspicious of new matters. It is true that only ignorance could explain any such attitude toward the active principles, but we must not forget that ignorance is the greatest foe to the progress of humanity and to the profession at large. Ignorance is the enemy against which we must fight.

We are championing a reform which works a revolution in applied therapeutics, nothing less. It is perfectly natural that this should be met with suspicion and distrust, until one has had time to examine into its merits; and to many, unfortunately, this time never seems to come. Each and every one of us is circumscribed in his mental attainments and qualifications. Every one of us is inclined to systematize his knowledge, and as this is done to crystallize it, the result is that we get into certain ways and methods of thinking and acting, and in these we remain. This eases our work considerably, just as it eases our study of therapeutics to have a systematic classification of the remedies which enables us to study them in groups.

After one has formed a system of this sort, he rather unwillingly modifies it by the introduction of new material knowledge. The new knowledge may assimilate easily, however, and if so, he admits it. But if this new matter is of a sort to disrupt completely the old system, and necessitates its rebuilding, the man unconsciously shrinks from undertaking such a task and prefers to go on in the way to which he is accustomed, using the methods and means with which he has become familiar, and with which he is doing work to his comparative satisfaction.

While this applies to a certain proportion of the profession, it does not apply to all, by any means. We have one very large group of supporters drawn from the elderly members of the profession, men who have used the old materia medica until they are thoroughly disgusted with its inefficacy and are ready to throw it overboard. Some among these refuse to believe that there is anything else, their disgust with therapeutics in general being absolute; but others appear to be willing to give a trial to the new methods, and when they do, their enthusiasm is something touching to behold.

A textbook which should be studied by every man who feels it incumbent upon himself to advocate a great reform is "Darwin's Life and Letters." The methods employed by the great iconoclast and philosopher are those which are necessary for success in any like enterprise. Darwin took up the men who wrote in opposition to his theory. He studied the man, ascertaining what he had done that was along his line of research, and got into communication with him, speaking in pleasant terms of subjects which both had studied in common. He delicately called attention to the point up to which the other man's ideas and work harmonized with his own, and expressed the hope that further study along that line might result in still further agreement. Usually the other men realized for the first time that he had been traveling along the same road with Darwin, and the result was generally that he found he could go still farther, and before long he had ranged himself as a supporter of the Darwinian doctrines. The book is a model in this respect.

In our intercourse with other physicians we should be governed by a kindly, considerate spirit, with even-handed justice, tempered with mercy, and with the desire to cover up our neighbor's wrongs rather than tear away the veil and expose them to the public. This should be our rule. It may be acquired by practice. I do not believe it is natural to one of us; it certainly is not to me. But I have learned much by stopping in every case to ask myself what would have been my own course had I been exposed to like temptations and like circumstances as my erring brother; and the result has been that in every instance I have found sufficient reason to justify me in treating his derelictions as I should like to have had him treat mine. This does not mean in any degree a smooth compliance in a wrong diagnosis, or aiding in deception or wrong-doing. That would be going too far.

But it is very rarely necessary for us to do such a thing. Suppose we are called in consultation and we find that our brother is "dead wrong." Very well; we retire to another room for our consultation, and see that there is no possibility of being overheard. Then we lay our case squarely before him, and we must necessarily come to an agreement. When this is done, our next

duty is to protect the reputation of our colleague and to allow no word, or hint, or intimation, to escape us in the presence of the family that could work to his detriment. We rarely have to counsel the change or the omission of his treatment. If we do, we can easily put it upon the ground that it has already accomplished all the benefit of which it is capable, and that we may make it the basis for a further extension of the treatment. As a matter of course people expect a consultation to be followed by some additional treatment; that is what they think they are paying the consultant for, and this is but natural. Its addition to the former treatment saves the reputation of our colleague, who would suffer if the new treatment were substituted entirely for the former.

It may be that there are some men so constituted that they could continue to speak evil of us if we consistently and uniformly speak well of them. It has not happened in my own life that I have had to meet one such man. Unfortunately many physicians feel that they are in self-defense bound to lose no opportunity of speaking detractingly of their competitors; and when a new physician settles in a town all of the old ones are apt to combine in this manner against him. Nevertheless, the quiet, even-handed, courteous way of proceeding must have its effect.

One must be ethical, one must respect the prejudices and customs of the community in which he settles. To do otherwise would show one to be so lacking in tact that his failure is a matter inherent in his mental constitution.

Everybody who is successful advertises. One must do so, and there is nothing inherently wrong in advertising; but it must be done strictly within the ethical limits. It is absurd for a man, had he the qualifications of a Senn, to expect that the community will realize this by intuition, without having evidence placed before them showing this to be the case. But that does not mean that you are to place a column advertisement in the local paper with your picture at the top. Advertise, but you must and should do so in a strictly ethical manner.

Don't be afraid to be on the "other side." No man with a mind can help disagreeing with other people once in a while.

THE ILLINOIS STATE BOARD OF HEALTH

In our April number we referred to a "war of words" between Dr. Carl E. Black, chairman of the Judicial Council of the Illinois State Medical Society, and Dr. James A. Egan, secretary of the Illinois State Board of Health, relative to the alleged "slackness" of the Illinois Board in passing candidates for licensure in this state, and the charge made by Dr. Black that Illinois is "one of the rotten spots in the United States in medical education." Since this was published the war has gone merrily on in the February, March and April numbers of *The Illinois State Medical Journal*, Dr. George W. Webster, president of the Board, and the editor of the *Journal*, each taking a hand, in addition to the previous combatants.

We need not enter into the details of the fight, which presumably is of little interest to non-residents of Illinois, and which has to do largely with the fixing of the responsibility for the alleged lack of adequate medical-practice legislation in this state. Frankly, our sympathies are with the Board, the whole controversy looking to us like an effort to find a scapegoat for the derelictions of the medical body, which might perhaps be found nearer home. We agree with Dr. Egan that "the ideal and Utopian in medical education are attractive, and seem readily available to those who are not conversant with the state laws; but it will be found that the very laws which authorize supervision of such matters also exact moderation in their enforcement."

There is too much of a tendency to seek panaceas for all our professional troubles by "getting the law on somebody"—even to the extent of killing off at one fell swoop nine out of the twelve medical colleges in Chicago, because somebody has found that

only three (the balance being small, young or poor) are not "acceptable." And yet there is ample evidence to show that *most* of the "unacceptable" nine are doing excellent work, and that their records in state-board examinations will compare very favorably with some of their more wealthy brethren. Our sympathies, somehow, go out to the smaller schools.

That Illinois is not a "plague spot" in medical licensure is shown by a comparison of the results in this and other large states. Thus, in 1908, Illinois rejected a larger proportion of candidates than New York, Pennsylvania, Ohio, Michigan, Wisconsin, or Indiana. Iowa rejected more than Illinois. In the same group of states only Wisconsin, Indiana and Iowa rejected more of their home graduates.

To a spectator it looks as though the war had gone far enough. Instead of finding fault with our state officials we should be glad to see our society and its organ lending them the encouragement and support which alone are needed to increase the measure of their efficiency.

The worſt ſin againſt our fellow creatures is not to hate them, but to be indifferent to them; that's the eſſence of inhumanity.—Bernard Shaw.

PURE-FOOD REFORM

The trouble with reformers is that when reform gets to be a habit, the reformer never knows where to stop. There is no intoxicant which equals, in heady properties, public commendation. It is the wine which is certain to go to the head of any but the strongest and most equable of individuals, and such persons are not usually prominent as radicals.

With most of the judgments rendered under the pure-food law we are heartily in accord. When "Gowan's pneumonia cure" is condemned for false and misleading statements, such as that "it is entirely different from any other remedy, containing new principles never before applied, consequently it cannot be substituted;" when it says, "it supplies an easily absorbed food for the lungs and effects a quick, permanent cure," and when it omits to mention the quantity of opium contained in it or prints it in such a manner as not to be readily noted by the purchasers, we fully concur in the condemnation.

So, also, as to the proscription of "eye-line," which we do not believe "has the property of repairing and rejuvenating the eye and the sight," since perfumed vaseline cannot well possess such remarkable properties. We also share in the governmental doubts that "bromo-febrin is a sure cure for headache and neuralgia," or that "it is absolutely safe," since it contains about 50 percent more acetanilid than the label calls for.

When "Dr. Rupert Wells" advertised his "radol," as "a radium-impregnated fluid," and the contents of the bottle proved to be not radium-impregnated, but without radio-activity, it certainly looks as if the department were not far wrong in pronouncing it false and fictitious.

Still further, we heartily concur in the condemnation of the practice of labeling canned peaches and apricots as containing two and one-half pounds per can, when the gross weight is only thirty-four ounces, as being calculated to confuse the average mind in regard to the principles of arithmetic.

When the parties who make "damiana gin" forget to add that strychnine, brucine and salicylic acid are ingredients of the rejuvenator, we feel that people who thus imperil the lives of possible customers deserve a worse condemnation than the confiscation of their goods.

Still further—is colocynth technically and really adulterated if the pulp and seed are ground up together to form the powder? Since the activity of the plant is confined to the pulp and the Pharmacopeia directs that it alone should be employed, this may be looked upon as an actual adulteration, although the label is literally true in designating the contents as powdered colocynth.

But the next case seems somewhat difficult. Mapleine is condemned, as, in the opinion of the government expert, the ordinary, everyday customer is liable to believe-

from the label that it is prepared from maple, whereas this is not the case. The label does not say that it is derived from the maple, and it is acknowledged that the preparation is a harmless substance calculated to give a maple flavor to syrups. Here we feel as if the law had been somewhat stretched, as mapleine is exactly what the label says it is, and nothing more is claimed for it than is actually true.

In still another instance the exceeding care of the government experts is shown. In Louisiana chicory is commonly employed as an ingredient of the beverage, coffee, not as an adulterant or a substitute, but because the people like the chicory flavor. Experts in coffee making will state what proportion of chicory they add to give the exact flavor thought most desirable. A New Orleans concern puts out a blend upon the cases of which is the correct label, "Louzianne roasted coffee and chicory," but the individual cans in the cases are labeled as simply "Louzianne coffee," and the omission of the word chicory from the can-label has occasioned the condemnation. It is probable that no fraud was intended, since in New Orleans, where this coffee is prepared, chicory is employed as a matter of course. But when exported to other parts of the country where chicory is not so used it would be looked upon as probably an adulteration. Chicory is quite harmless, and as it is said to cost more than coffee, the blend is not made as a cheaper adulterant.

Here, therefore, a nice question comes in. Chicory is employed to impart a peculiar flavor to the coffee, which is distinctive of this brand, just as a peculiarly delicious flavor is imparted to beefsteak by rubbing a piece of asafetida on the gridiron.

Under these circumstances, is the cook compelled to disclose the secret of his culinary skill to the world at large, and to his competitors? Should the manufacturers of "Louzianne coffee" be compelled to tell all who read the labels to what the distinctive flavor of the product is due? The addition of chicory does not necessarily cheapen the product or impart any unwholesome qualities to it. Altogether it seems as if in this instance the law had been somewhat strained in its application.

It is easy in the world to live after the world's opinion; it is easy in solitude to live after our own; but the great man is he who, in the midst of the crowd, keeps with perfect sweetness the independence of solitude.
—Ralph Waldo Emerson.

NUCLEIN IN TUBERCULOSIS

In *The Medical Record* for March 26 Dr. E. P. Ward of St. Louis presents a paper detailing his treatment of tuberculosis by the intravenous injection of nuclein. Prof. Ward begins his study with the lesions which occasion a growing diminution of oxidation. The increasing impairment of the digestive system renders the absorption of remedies given by the stomach more difficult; hence, to get the full benefit he resorted to injections into the circulation.

Studying his cases of tuberculosis, Prof. Ward finds in every one of them a decrease in the specific gravity of the blood and a corresponding lessening of the amount of hemoglobin and the number of red corpuscles. To estimate the specific gravity of the blood he employed Hammerschlag's modification of the Roy method. Besides the deficiency accompanying the diminution of the red blood-cells there is a very large increase of poikilocytes. The erythrocytes are very much deformed.

These changes occur in proportion to the severity of the disease. The specific gravity of normal blood is 1.058. If it falls to 1.045, the percentage of hemoglobin will have dropped to 50, and 20 percent of the red blood-cells will have become poikilocytes. As a consequence we have proportional deficiency in the oxygen-carrying powers of the blood.

Dr. Ward finds that under the influence of the nuclein solution the poikilocytes rapidly disappear from the circulation, the hemoglobin is eliminated by the liver as bilirubin and biliverdin, the deformed cells are replaced by new and healthy erythrocytes from the normoblasts, more rapidly than is possible under any other form of treatment as yet devised.

Prof. Ward employs nuclein solution containing approximately six grains of sodium triticonucleinate to the ounce, standardized to one milligram of organic phosphorus to each cubic centimeter, using this in physiological salt solution made up as follows: Calcium chloride, 0.25; potassium chloride, 0.10; sodium chloride, 9; water, 1000. This is employed as a vehicle for the nuclein, for the reason that it conforms to the normal specific gravity of the blood.

Hitherto nuclein has been credited as producing good effects chiefly through inducing leukocytosis. Prof. Ward considers that its value, when given intravenously, depends not only upon this, but even more upon its upbuilding power over the erythrocytes and hemoglobin.

While leukocytosis is of importance in destroying the tubercle bacilli, the effect of the products of these organisms is what we must overcome. Death occurs from chronic sepsis, from mixed infection, or from profound anemia, resulting from the actions of the toxins or the bacilli upon the erythrocytes.

In the tables presented it is clearly shown that following the intravenous injection of nuclein the percentage of hemoglobin is markedly increased. The number of red corpuscles is likewise increased, and the specific gravity of the blood is almost uniformly brought up to or near normal.

In the technic of intravenous infusion surgical cleanliness must reign supreme. Dr. Ward uses an ordinary infusion bottle with six feet of rubber tubing, one-fourth inch in diameter, and a No. 18 or 20 saline-solution needle. The needle should be sharp and with not too long a cutting edge. The needle is kept in alcohol when not in use. The bottle and tube are sterilized before placing into it the solution. The median cephalic or median basilic vein is selected, a ligature is placed about the arm and the injection made under strict antiseptic precautions. The dose of nuclein is regulated by the results obtained upon the blood.

Out of the forty-eight cases treated in this manner there were five deaths. In no case did the treatment prove harmful. Fifteen of the forty-eight cases are reported, the others not having been under observation a sufficient length of time. The injections were repeated in from one to seven days. Examinations were made at regular intervals for a period of twenty-four weeks. The net results are summed up by the author as follows:

1. If there is not a net increase in the percentage of hemoglobin in two weeks' time, we do not expect any permanent result.

2. Even when there is no net increase in the hemoglobin, the treatment aids in keeping these people upon their feet.

3. With a constant increase in the percentage of hemoglobin, when the same has reached 85 to 100 percent, and remains there for one month after all treatment has ceased, the patient may be declared well.

Nine of the fifteen cases are reported as recovered, four improved, two died.

Collecting money is by no means the same thing as making it; the tax-gatherer's house is not the mint.
—John Ruskin.

THE MANAGEMENT OF CONSUMPTION

We all well remember the cruel disappointment and the dashing of hopes which followed the announcement, several years ago, that Koch had discovered a cure for consumption. It is of course possible that a real "cure" for this disease may be found some day, and when it is we may be sure that there will be little delay in its adoption by physicians; but the premature vaunting to the layman of alleged "specifics" is greatly to be regretted, because of the misery which their failure causes to thousands of disappointed sufferers.

But while we are waiting for the discovery of a cure for consumption, we can use one remedy which we have at hand in abundance, and without cost to the patient. Fresh air, fresh air, and more fresh air. Yet, like any other remedy, this is of no service unless it is taken into the body. For this purpose exercise out-of-doors is needed—exercise, however, never carried to the point of exhaustion—in order to force the breathing,

expand the lungs, and fill them with the pure air.

It was stated by a Boston physician some years ago that the use of bicycle has lessened the amount of consumption among women, and if this is so, the explanation is not far to seek. Devotion to the bicycle led women to exercise in the open air, and more energetically than it had been possible for most of them in any other way.

In Denmark the postmen often have very long routes in the country regions, and are obliged to walk or ride many miles a day in all kinds of weather; but undesirable as such positions would seem to be, they are eagerly sought after and often by consumptives who want to get well. It has been proved that the work is life-saving, for despite the hardships and the exposure to wind and rain and snow, almost all the invalids who adopt the life become robust and hearty.

Of course, to be effective, open-air exercise must be begun early in the course of the disease, and should always be carried out under the direction of a wise physician, since it is capable of doing harm, must never be abused, and usually should be supplemented by the use of other remedies.

And this leads us to remark that it is a mistake to rely entirely on nature and good food, to the exclusion of proper remedies. Drugs are absolutely essential to the successful treatment of pulmonary tuberculosis.

We work with our heart, liver and stomach; the head and hand are just parts of the productive machinery.
—David Gibson.

A GOOD WORD FOR THE COALTAR PRODUCTS

In *The Monthly Cyclopædia*, Sajous presents a well-founded plea for the much-abused coaltar derivatives. These drugs are used more today for the relief of pain than for any other purpose. They have that advantage over the opiates and their congeners that they do not lead to a habit, at least no such habit as that of morphine-addiction. The objections to these preparations are largely due to their abuse through prescription by pharmacists, rather than from their legitimate application by physicians. But if this were held as a reason for discontinuing remedies there would be few of our active agents that we should not be compelled to lay aside.

In concluding his article Dr. Sajous says: "Summarizing these facts, it seems plain that far from being harmful, in the hands of the profession, the coaltar derivatives have furnished us the only means to avoid the use of the opiates which, notwithstanding the great service they have rendered humanity, have left in their train victims in numbers untold, and the shadows of which hover at once before the modern practitioner's mind when he is called upon to alleviate suffering."

The coaltar preparations have a useful place and certainly should not be discontinued. Dr. Sajous is right. It is true that their substitution does not fill nearly so large a place as does that of hyoscine and of hyoscyamine when employed instead of morphine for the relief of pain. Nevertheless, each is of value, and when these two groups of remedies are employed in the conditions to which they are better fitted than the opiates, there is left an exceedingly small field in which the latter are really more appropriate. In fact, some observers insist that there is no field whatever left for morphine when we have studied the pathology underlying painful maladies and learn to employ the exact physiologic remedies therefor.

Be it true or false, what is said about men often has as much influence upon their lives and especially upon their destinies, as what they do.—Victor Hugo.

SCOPOLAMINE-MORPHINE ANESTHESIA

In *The Journal of the American Medical Association* C. U. Collins contributes a valuable report on scopolamine and morphine as a preliminary to general anesthesia, the report being based on an experience of eleven hundred cases.

Dr. Collins quotes Terrier, as stating that ether should never be used in relation with this combination. Collins says, however, that in the large majority of his cases ether

was employed after the hypodermic without harmful effects resulting.

Bloodgood has said that the combination named is contraindicated in exophthalmic goiter.

The author, however, did employ it in such cases, and beside the preliminary dose, administered one the night previous to the operation. He observed no harmful results in these exophthalmic-goiter cases, nor did he find that scopolamine and morphine induced contraction of the abdominal vessels, rendering operation difficult, as has been asserted. Occasionally it is difficult, however, for the anesthetist to determine just when the patient is properly under the influence of the ether, since he lies so quietly under the scopolamine-morphine that the anesthetist is apt to think that he is ready and properly relaxed when in fact he is not. In these instances some contraction of the abdominal muscles was noticed, but a little more of the general anesthetic quickly remedied that.

One writer has stated that scopolamine-morphine was used for local anesthesia. Dr. Collins never noticed any local anesthetic effect produced in this manner, nor has he heard of such result. Wood strongly condemned its use as a preliminary measure, but gave no personal experience on which to base his disapproval. On the other hand, Nicholson reported 650 cases in which the combination had been used with no unfavorable results. He also reported experiments on animals which seem to contradict Whitacre's conclusions, the latter claiming that the combination produced fatty degeneration of the kidney and liver when it is injected into animals.

Collins concludes that Gwathmey's prophecy is coming true: the latter said that the preliminary scopolamine-morphine injection, supplemented by as much of any general pulmonary anesthetic as might be necessary, was theoretically correct and clinically safe.

Collins employs the preliminary injection in all patients over eight years of age. If an elderly patient is considered strong enough to undergo an operation, he is considered strong enough to have the beneficial effects of this combination, and it has not been withheld from any elderly patient on account of his age. Extremely ill patients do better when given but very little of a general anesthetic, and the preliminary of scopolamine and morphine permits the minimum amount of the general anesthetic to produce the desired degree of anesthesia.

At first the author employed chloroform following the combination, but since then has substituted ether, using it in the majority of the cases embodied in the present report.

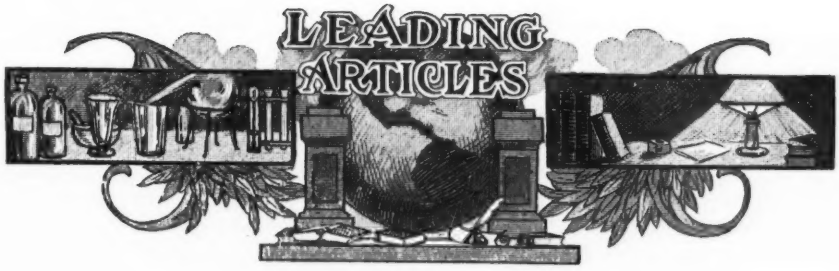
Of late he has been using nitrous-oxide gas following the scopolamine-morphine, finding that there was a great deal less of the convulsive movement of the muscles as the patient was going under the influence of the gas.

No deaths have occurred that could in any way be attributed to the preliminary use of scopolamine-morphine. Unpleasant symptoms appeared in only one case, which he attributed either to an idiosyncrasy or some imperfection in the preparation of the tablets.

Dr. Collins' conclusion is as follows: "The above experience, based on eleven hundred cases, seems to show that scopolamine and morphine as a preliminary to general anesthesia is a rational procedure, adding greatly to the comfort of the patient by relieving him of all nervous apprehension prior to the administration of the general anesthetic, by permitting him to sleep some hours after the operation is completed, by greatly decreasing the postoperative vomiting, and mitigating the dangers of the general anesthesia by lessening the amount necessary to produce the desired effect, and by checking the secretion of mucus in the throat."

Thus the evidence as to the value of preparations of this class keeps on accumulating. It has been our experience that those who use them most like them best, and that the words of criticism come almost exclusively from the men who have had no experience with them.

Dr. Collins having used the scopolamine combination naturally clings to it; with a larger experience with hyoscine-morphine we are sure he would soon appreciate its advantages.



Ex Ignorantia in Sapientiam

The Slow Growth of Scientific Medicine in the Face of Incredulity and Intolerance

By W. A. NEWMAN DORLAND, A. M., M. D., Philadelphia, Penn.

EDITORIAL NOTE.—This splendid paper is an address delivered to the graduating class of Bennett Medical College, Chicago, at the Annual Commencement, May 24, 1910.

YOUR dean, whom I have numbered among my friends for many years, has informed me of the long step forward which you, as a college, have recently taken. It is a step in the right direction, and one which commands the approbation of all well-thinking medical men. It spells progress in letters of flame and means tremendous growth toward the ideal. It shows, as nothing else could have done, that there is life here—vital power capable of development beyond the imagination of man. For who can set a limit to the possibilities of growth? Death means stagnation, cessation, decay; but growth denotes enlargement and improvement toward the illimitable future whose wonders and mysteries defy the most acute and penetrating mind to define. "Eye hath not seen nor ear heard, neither hath it entered into the mind of man to conceive the things" that lie beyond in the unturned pages of futurity.

Now, the magnificent thing that you have done has prompted me to investigate for a few moments, and with you, this very interesting question of growth in our profession. From this study we may learn a thing or two—which will be well, for you may recall that Plato said, "It is better to be unborn than untaught, for ignorance is the root of misfortune."

Seven Thousand Years of Medical Science

My friend, Dr. James J. Walsh, dean of the Fordham University of Medicine in New York City, not so very long ago made a most remarkable statement. It was to this effect—that the principles of medicine were known and intelligently administered as long as seven thousand years ago. Dr. Walsh knows that of which he speaks. He is a careful student of medical history, and his words come with the weight and authority of a master of his department. Therefore we listen attentively, and accept, even though our acquiescence be tinged with wonder that it is so. His statement is so concise and simple that its eloquence holds us. It was said of the great Prussian field marshal, von Moltke, that he could be eloquently silent in seven languages; and John Milton, we read, refused to let his daughters learn any other than their mother tongue, on the ground that one tongue was enough for a woman. Garrulity is, indeed, a serious affliction that seven thousand years of medical training has not learned to conquer; and delightful as a word well spoken and in season may be,

it remains true that silence may be vastly more eloquent than speech. Even the fool who is silent often passes as wise; but when a man like Dr. Walsh speaks, his words are golden nuggets of thought which open up vistas of learning and investigation undreamed of before.

Why Have We Developed So Slowly?

Seven thousand years of medical science! Instinctively one thought springs into being. Why, then, has the growth and development of our learned profession—as we are so fond of calling it—been as little as it is? Seven thousand years! Had the tiny ball of scientific knowledge which was started on its tremendous journey down the ages from the time of that first Egyptian physician of whom we have any record, who lived in the reign of King Tchser of the third dynasty, about 4500 B. C., met with no opposition in its mighty rush onward, what a tremendous avalanche of scientific acquisition would now be sweeping through the world, bearing its untold blessings to a grateful and appreciative population! What has happened that we of the present day are not borne on the crest of such an imaginary, but much-to-be-desired, wave of scientific medicine as this?

Has it been that the scientists who lived in the dawn of the ages, in the twilight period of the past, when, as we read, even thus early in the authentic history of the world surgery was an organized branch of medicine, anatomy known and even well written up, and traces of highly developed specialism in medicine were to be found—I say, has it been that those early scientists who showed such wonderful initiative and energy have not found worthy successors in all the ages that followed? Are we of today just awakening from a lethargy that has paralyzed growth and impeded all progress? It seems to me that had we behind us seven thousand years of irresistible energy and accumulated clinical experience we should be as far ahead of our present day knowledge of medicine and surgery as the Hindu mystic is ahead of our occidental mind in occultism and things transcendental.

The truth is becoming more and more evident that in many medical things we are but learning anew methods and practices long since forgotten and buried beneath the rubbish of time. "*Nil novi sub sole*"—nothing new under the sun—has never been better demonstrated than in the study of medicine. Probably one of the most interesting and instructive essays ever written was that on the evolution of medicine which was published some years since in the *Journal de Pharmacie* by van Schoor, a few citations from which will amply illustrate my point.

How many of us—and we pride ourselves on our learning—know that Hippocrates was well acquainted with the intestinal patches that Peyer two millenniums later discovered and described? Eudemus, a contemporary of Galen, speaks knowingly of the pancreatic duct which Hoffman and Wirsung first discovered in 1630 A. D. Herophilus in 210 B. C. described the chyliferous vessels which Caspar Aselli discovered in 1600 A. D. In the fourth century before Christ Alcæon incidentally refers to the auditory duct, which two thousand years later was known as the Eustachian tube.

This in anatomy; and what of surgery? Hernial operations, we read, were performed 250 years before Christ; Serapion removed diseased kidneys; and, after having been forgotten for centuries, thoracentesis for the relief of empyema was rediscovered in 1650 A. D. Hippocrates, we find, speaks of intubation of the larynx, and his contemporaries practised asepsis by dipping their instruments in boiling water. Cœlius Aurelianus speaks of the successful performance of tracheotomy, and Praxagoras is known to have performed an abdominal section and to have sutured the intestines. Even anesthesia, in a sense, long antedated our modern era; for we are told that as early as the thirteenth century it was customary before operating to administer to patients, by means of sponges placed in the nose, the juices of certain sedative plants, such as stramonium, belladonna and mandragora, consciousness being restored by the application of vinegar compresses.

The clinical teaching of medicine which we have regarded as essentially the modern method was common in Rome two thousand years ago, as Martial's famous epigram shows, which, translated by Witherington, is as follows:

"Languid I lay, and thou camest, O Symmachus, quickly to see me.
Quickly thou camest, and with thee a hundred medical students.
The hundred pawed me all over with hands congealed by the north wind—
Ague before I had none, but now, by Apollo! I have it."*

Hydrotherapy, gymnastics, and the open-air treatment were practised by the Greeks and Romans; hypnotism was highly esteemed by the priestly physicians of the temples of Isis in ancient Egypt; while organotherapy is, perhaps, one of the oldest forms of medication of which we have any mention.

The history of drugs, also, shows a peculiar cyclic feature, certain remedies which were formerly in great vogue falling altogether into disuse, only to be revived as new remedies in a more modern era. Opium, which appears to have been forgotten for several centuries, has been found in ancient Egyptian tombs, and Hippocrates employed it freely as a sedative, as did also Paracelsus; Pythagoras recognized the diuretic value of squill, after which its use lapsed for a long period; Galen speaks of the therapeutic importance of male fern, which centuries later was, through the agency of a charlatan, brought for the first time in modern medicine to the notice of Louis XIV; Lentilius employed arsenic as a febrifuge, and Hippocrates advised its use in cancerous affections, while we of today have only recently resuggested its employment for the same disease in the form of the cacodylates and arrhenal.

Dentistry is generally believed to be a very modern profession. As a matter of fact a complete treatise on pyorrhœa alveolaris was written over two thousand years ago; and mummies have been found in the cemetery of Thebes, probably antedating 3000 B. C., having in their teeth the remains of gold fillings that were well put in (and show good workmanship) nearly five thousand years ago, while others boasted artificial teeth equal to any of our present day.

*Languebam: sed tu comitatus protinus ad me
Venisti centum, Symmache, discipulis.
Centum me tetigere manus Aquilone gelatae.
Non habui febrem, Symmache, nunc habeo.

The Old, Revived, Becomes the New

In this synoptical study of the history of medicine it is interesting to note that the progress which has been made has been spasmodic in nature. Often that which was achieved by one group of men lapsed into oblivion only to be rediscovered and added to by the succeeding—or a later period of activity. Sir William Church in his notable address on medicine, old and new, which appeared recently in *St. Bartholomew's Journal*, has given what is probably the best grouping of the history of medicine as yet proposed, and it beautifully illustrates the point I have been endeavoring to elucidate —the slowness of the growth of medical science. He divides his subject as follows: (1) The pre-Hippocratic period, of unknown length; (2) the period ranging from Hippocrates (460 B. C.) down to the time when Greek learning began to be lost sight of (about 600 A. D.)—a period of one thousand years; (3) from the end of the seventh century after Christ to the time of Harvey—about one thousand years; (4) from Harvey's time till Pasteur's—220 years; (5) from Pasteur and his followers, onward.

It is probable that Hippocrates embodied in his writings the accumulated medical lore of the preceding ages, and enriched this from his own extensive experience. That his extraneous knowledge was not very considerable is evidenced by the purely Grecian character of the medicine of his time. As Church has indicated, "the medicine of Greece, like its philosophy, owed little to outside influence, and certainly did not depend, as has been ignorantly suggested, in any way on Oriental sources." The physicians of Greece were learned men, rich in initiative, and "obviously held a high position in the Grecian communities as educated and philosophical men."

From the days of the "Father of Medicine" to the appearance of Galen the history

of medicine is practically a blank, but for several hundred years subsequent to the latter physician we find the medical writings maintaining a high standard of excellence, down to the time of Paul of Ægina. Then there settled upon the western world an inky darkness which swallowed up the Greek learning and culture in a maze of ignorance, intolerance and religious superstition. Church states that "during those years of gloom Europe owed all its knowledge of Greek medicine and philosophy to the Arabians, who translated, transcribed, and borrowed from the Greek authors which came into their possession." The Arabic manuscripts, in turn, were translated into Latin, generally by learned Jews, and thus it came to pass that the Arabian physicians were so highly esteemed during the Middle Ages. After Mundinus, the famous anatomist of Bologna, who died in A. D. 1326, no further progress was noted in the knowledge of anatomy for two hundred years. Then, in the Sixteenth Century, arose a group of giants—Vesalius, Fallopius, Fabricius and others—whose magnificent work paved the way for Harvey to lay "the foundation of scientific physiology based on observation and experiment."

The Tenacity of Medical Superstition

After Harvey's time, is it not remarkable, as Church has noted, that, notwithstanding the enormous progress made by physiologic knowledge, the views of diseases were not materially altered until these days of ours, and that their actual etiology was not understood any better than in the days of the Greeks? It required two thousand years to supplant the miasmal theory of malaria and yellow fever by the established truth of mosquito infection. Sixty years must elapse from the announcement by Spence, in 1841, that a loose fabric of ***white threads kept mosquitoes away*** much more effectively than one of black threads, before it became possible to establish the fact that mosquitoes have a well-developed color-sense. Today we have only begun to recognize the pernicious influence of the domestic fly as a pest-producer and a transmitter of typhoid fever and other loathsome diseases; and it was but one hundred years ago that a contemporary of Adam Kuhn and Benjamin Rush published the following:[1] "Flies are among our best friends at this season of the year. A living fly purifies the atmosphere by destroying putrefaction; but a dead one generates pestilential air. Let us, instead of poison, set some nourishing food for them; and instead of darkening our rooms to drive them out, open our windows and invite them in. Give them plenty to eat on the sideboard, and they will not infest us at table. Furnish them with plenty of paper network to lodge in, and they will not spoil our furniture."(!)

The Ancient Idea Regarding Catarrh

The ancient belief that catarrh resulted from a flux from the brain had firmly ingrafted itself upon the medical mind, and died very hard. Even at the zenith of "the age of reason"—the reign of the English Queen Anne—James Handley, a popular writer on health, remarks: "Fernelius saith, besides serum within the cranium, there's other excrements gathered in the external parts of the head, especially under the cutis of the vertex, where the vessels have their extremities, which, when they grow turgid with too much serum or other humour, they shed forth under the skin that which they cannot carry off, and there it remains, because the thickness and looseness of the cutis permits it not to evaporate; and there's sometimes so great a collection here, that it causeth a soft swelling, that manifestly heaves up the pericranium from the cranium. This is assuredly the source of all external distillation." And the writer marvels that the ancients never noticed what to him is demonstrable truth! "Hence," he continues, "rheumes fall into the eyes, cheeks, teeth, neck, shoulder-blades, sides, back, loins, hips, thighs and all the joints, and this is certainly the foundation of every external pain, particularly in a catarrh." It was to clear the brain of "rheumes and humours" that the habit of taking snuff originated—and this after sixty-five hundred years of medical scientific growth!

1. *American Daily Advertiser*, Phila., July, 1802.

Charles the Second of England, we are told, lived less than a week after he incurred his fatal illness, and, if we consider the remarkable polypharmacy to which he was subjected, the only wonder is that he lived as long as he did. Listen to *some* of the extraordinary details of those last days:[1] "The royal patient had fourteen doctors in attendance. They bled him to the extent of thirty-four ounces; they shaved his hair and applied blistering agents all over his head; they also applied plasters to the soles of his feet; and they dosed him with orange infusion of the metals; white vitriol dissolved in compound pæony water; powder of sacred bitter; syrup of buckhorn; rock salt; emetic wine; two-blend pills; bryony compound; powder of white hellebore roots; powder of cowslip flowers; best manna; cream of tartar; barley and licorice; sweet almond kernels; sal ammoniac; antidotal milk-water; mallow root; melon seeds; chicken broth; bark of elm; a julep of black-cherry water; flowers of lime; lilies-of-the-valley; pæony compound; spirit of lavender, prepared pearls, and white sugar candy; senna leaves; flowers of chamomile; gentian root; nutmeg; ale made without hops; spirit of human skull (commonly employed in convulsive disorders; the purpose was suggestive, viz., to excite horror, as it was to be the skull of a man who had died a violent death); Peruvian bark; syrup of cloves; Raleigh's stronger antidote; goa stone; Rhine wine; and Oriental bezoar stone." And then the good king died! It is interesting to note that he was suffering from Bright's disease, but I doubt if the shrewdest diagnostician among you could have guessed the complaint from a perusal of this "shotgun" system of medication. And this after over six thousand years of scientific medical growth!

The Modern Awakening in Science

Gentlemen, the world grows better, and we are now living in the most expansive age the world has ever seen. No one will controvert me, I think, when I state that more progress has been made in medical science during the past fifty years than during the whole prior existence of the human race; and this, I believe, is but a forecast of the wonders of the fifty years to come. Miracles are being enacted all around us in other departments of science—why not in medicine? Steel cannon, smokeless powder and the use of high explosives in shells have revolutionized warfare since the Franco-Prussian War, but the noise of artillery fire and the discharge of smaller weapons is about to be suppressed. The war-balloon and the submarine will, doubtless, speedily settle the next great conflict. The airship is looming on the near horizon. The network of wires will vanish before the early onset of wireless telegraphy and telephony. The synthetic compounds of the chemical laboratory are supplanting the products of nature. Radioactivity has changed the fundamentals of physics. The transmutation of metals is at hand. Electricity is vanquishing steam; and the ultraviolet rays are astounding us by their marvelous potentiality.

Why is it that all this wonderful awakening has not come upon us long before this? The moralist will tell you the time was not ripe, and that in the fulness of time all things desirable will develop. But this is but a feeble effort in explanation of a remarkable fact. The truth is, there have been potent causes to account for the retardation of notable progress in seven thousand years. It is true that due responsibility must be laid upon the crudeness and ineffectiveness of the means of perpetuating knowledge which were overcome when Gutenberg invented printing. The tediousness of manual transcription and the impossibility of multiplying records were powerful hindrances to rapid development. Nor must we forget the vandalism of evil men who from sheer wantonness destroyed precious archives and records, as at the fall of Alexandria. But these have been as nothing when compared with the obstructive tendencies that so often dominate the minds of otherwise righteous men. Someone has said, "the world is held back from true progress not so much by

1. "The Last Days of Charles II." By Dr. Raymond Crawford.—A monograph from the Clarendon Press.

the badness of bad men, as by the obstinacy of good men who have stopped growing." Incredulity and intolerance—these are the potent obstacles to progress of any kind. Incredulity is the rock upon which small minds rivet; intolerance is the shoal upon which greater men shelve; and it has been largely due to the pernicious influence of these two factors that progress in medicine, as in other sciences, has been retarded beyond computation.

The Evil Power of Incredulity

"Can any good thing come out of Nazareth?" was the cry of the incredulous two thousand years ago, and the answer has been thundering down the ages ever since. The incredulity of man does not limit itself to religion and the affairs of mysticism. Not a discovery in science is announced without arousing skepticism and even violent opposition, and this spirit of agnosticism is carried on to the scientist himself. We doubt the fact and we doubt the ability of the man. We contemptuously discredit his claim and himself. Thus would we quench the flame of scientific progress with the water of incredulity, ignoring the fact which stands out prominently against the pages of history that it has ever been the most unlikely source from which has arisen the greatest good. "The door of truth cannot be opened by the key of prejudice," and we but cast mountains of difficulty in our own way and in the path of scientific progress by such a suicidal course as this. After all, common sense is far from common, and the ultra-conservatism upon which we pride ourselves is merely prejudice and envious spite parading in the garb of a virtue.

Often it is ignorance of the matter in question which decides the position of opposition, and could an intercommunication be established between the new thing and its antagonist the skepticism would vanish as a cloud before a dry wind. It is said that after Marconi had been for two years successfully transmitting messages "via wireless" over great distances, a certain prominent railroad surveyor scoffed at the scheme as chimerical, and furthermore, "the only kind of ether with which he was familiar was the kind that mercifully makes men oblivious to suffering." Such a man as this, had he lived seventy-five years earlier, would have derided the possibility of anesthesia or of sending messages by wire. He is one of a well-recognized class—and how powerful this class in retarding progress! Anything that is new is impossible, simply because, to these individuals, it is unknown. Because of their unbelief a difficult pathway lies before the new and good, and the man who does is condemned as an enthusiast and as a dangerous and unreliable experimenter. Surely, those who have done things, who have accomplished most for their own advancement and for humanity, have "come up out of great tribulation." The incredulity of their less energetic fellows hampers them and often, seemingly, destroys their usefulness—for the time. From their apparent defeat, however, they arise in the fulness of time to the joy of recognized merit; or, as someone has happily said, "Perhaps—who knows?—the story of the phœnix from the ashes means that the bird tasted a great deal better after it had been cooked." We first "roast" our great men, then adulate them.

The corollary to be derived from this curious trait of human nature is evident. Let the good deed of scientific inspiration be done unmindful of criticism, and leave the settling of things to futurity. The president of one of the large railroads of our country complained to the general manager of the road of the number of accidents that had occurred. "Well," was the happy answer, as the man glanced over the casualty figures, "the wrecks mean that something's moving along our railroads." It was because things were not kept moving, but were held up by the incredulity of the world, that the seven thousand years of medicine that are behind us have not a better record—good as it is—to their credit. The one vital point, then, where we are all so prone to fall is this: Forget the source of the new thing; the personality of the discoverer; the tenets of the school or profession from which it takes its origin; the name by which it is burdened—or boosted; the class by which

it is first accepted and which gives local coloring to it; and consider only the intrinsic worth it has and its adaptability to the circumstances which exist. This is the only test by which the new must stand or fall; and sooner or later all new things must come beneath its infallible decree.

Intolerance the Bane of Science

There is one other potent reason for the delays and periods of decay that mar the pages of scientific history, including that of medicine, and it is the intolerance of learned men and of schools of learning for the doctrines, tenets, and deeds of others not of their persuasion. Because "they are not of us" they are wrong and therefore must be suppressed—this is their argument, as fallacious as it is unreasonable. In variety of thought, in difference of opinion, in dissimilarity of workmanship, in all of these rests the main hope and prospect of progress, and the narrowness of mental vision which condemns as wrong and worthless all that is not in accord with the prescribed method is the surest way to mental and moral stagnation. This is the open secret of the "Dark Ages," when rank superstition and intolerant priestcraft smothered the feeble flame of science and excommunicated Galileo and other great souls whose noble heresies dared to flaunt themselves in the face of dogmatic creed. The wonder is not that the times were dark, but that learning and science survived at all.

Nor is this spirit of intolerance dead. Even in these enlightened times it dares to raise its evil countenance to decry a new theory or a plausible doctrine before it has been heard and tested. A noted divine in my own city, when condemning the popular clamor which arose against a certain opera because of the supposed immorality of the production and its author, and that among educated people who had never read the poem nor seen it produced, remarked: "It savors too palpably of the spirit of the dark ages with all its savagery of religious fanaticism, the same spirit of intolerance, indeed, that immured Galileo, burned Servetus, did to death tens of thousands of the devotees of scientific progress, and has stained the annals of mankind with unnumbered crimes in the name of religion . . . The immorality of the author of the lines is admitted, but the same law applied to literature would exclude the Psalms of David and the Epistles of St. Paul . . . Such a canon would destroy the value of all the decrees of wicked popes and invalidate the apostolic succession itself. Infallibility in office does not necessitate impeccability in character. . . . In the Vatican at Rome are the works of Raphael, and Raphael was a rake. The 'Last Supper' was painted by Leonardo da Vinci, and he was a skeptic. All the cathedrals of Europe are decorated with the art treasures produced in the period of the Renaissance, and that was a period of Pyrrhonism in religion and looseness in morals. . . . Does the charge that the opera in question is not veracious . . . history amount to anything? It sounds ridiculous as a canon of literary judgment. It would consign to destruction the choicest literary productions of the world. Even the Book of Job could not bear such a test. Milton's 'Paradise Lost' is a heroic poem, not a veracious history, and Milton's Satan is better than his God. Shakespeare's historical tragedies could not pass muster, and as for Æschylus, Virgil, Homer, the prose-poetical romances of Walter Scott, 'Ben Hur,' and many a gem beside, they would have no place but in the purgatorial index. . . . Many of the world's best creations have been condemned at the outset, simply because they have overleaped tradition. Time is a slow thunderbolt and may be trusted to shatter all false art as all false religion." This from a broad-minded and unusually tolerant religionary.

The doctrine of evolution awakened a veritable storm of protest and persecution, but who today will deny the theory of Darwin and Wallace? We, as scientific men, are not compelled to accept Gaskell's theory of the origin of the vertebrates, beautiful and plausible as it is, nor Sajous' theory of the internal secretions, nor Doyen's very recent enunciation of the cure of cancer by electrothermic coagulation, but who among us will

care to assume the position of denunciation and deny as possible the real good that lies behind the published writings of these earnest workers? The point of view varies with the individual, and one point of vantage will reveal wonders and truths that are unseen from the standpoint of another investigator. What we need is the broadness of vision which will recognize the great truth that there is an element of good in everything, be it theory or method or system—a new atom of knowledge, surrounded, it is true, by a shell of dross, but nevertheless an imperishable atom to be added to the scientific accumulation of the ages.

Moreover, this spirit of intolerance is not aimed alone at the work, but often concentrates against the worker himself. The audacity of his enthusiasm which dares to enunciate a new theory or truth not infrequently brings down upon his head a storm of invective and outrageous abuse which is astounding as it is disgraceful. It is argued that he has sprung from the people; that his education has not been as thorough as might have been desired; that his personal or family life is not altogether unspotted—anything, in fact, which will tend to detract from the excellence of his achievement. It is a trait of mind that I cannot fully comprehend which will at much pains delve into the musty tomes of the forgotten past in order to unearth from the muck-hills of the limbo of oblivion some malodorous taint of character or some unsavory record to besmirch the reputation of the heroes of our imagination or of our national or professional history. It is the final and most malicious attack of the spirit of intolerance of which I have been speaking, and which in the aspect of ultraiconoclasm would uproot and destroy without the power of replacing that which has thereby been lost by something better and higher. Even the reputations of the dead are not always held sacred.

What matters it to you or to me that Paul Revere was a mere jack-of-all-trades, and even tinkered in dentistry and posed as a barber-surgeon, when we know that the wild dash he made on that April night awakened the entire country, as it then was, into an unquenchable resistance to the despotism and tyrannous abuse that was oppressing it? The superficiality of character is forgotten in the glory of the one deed that made him immortal. If it be true that Samuel Adams was a defaulter and John Hancock a smuggler, and that Benjamin Franklin as postmaster of Boston pilfered letters from the mail, what care you and I, so long as we know that these great and noble patriots, taking their lives in their hands, defied their own kith and kin and dared one of the greatest military powers of their age to say them nay? Patrick Henry may have been the most unreliable of men; the Revolutionary heroes in general "a coterie of thieves who delighted to betray the public trust;" the immortal Washington addicted to profanity; and our own great Lincoln illiterate and vulgar—but what and where would our country be today could some dire cataclysm erase from the pages of history this galaxy of glowing names? "Remove first the beam from thine own eye," was sage advice, and Lavater showed his profundity when he said, "Just as you are pleased at finding faults, you are displeased at finding perfections."

I need not speak further. The fact remains that while there are behind us of today seven thousand years of medical science, as Dr. Walsh has stated, we have not the value of seven thousand years of scientific progress to our credit. The reasons for this we now know, and it remains for us, for you and for me who have the good of this noblest of professions at heart, to do our tiny part in breaking down the ramparts of ignorance, incredulity and intolerance which have so long and so persistently barred the rapid progress of scientific medicine. The improvement of the last half century in this direction shows that the hour is ripe. A broader view of things; a tolerance toward the new and strange in science, until it has been demonstrated as false; and an earnest investigation of theories as they are promulgated to sound their depths in order that we may ascertain their worth—this is the order of the day in progressive medicine.

The Prevention of Tuberculosis

With a Discussion of Its Direct and Indirect Causes

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AS the title of this contribution indicates, the prophylaxis of tuberculosis has two great phases. One deals with the removal of the direct causes, such as infection from the tubercle bacillus by inhalation, ingestion, and inoculation; the other with overcoming predispositions, inherited or acquired.

Direct Causes

To prevent an inhalation tuberculosis, we must do away with the possibility of the ejected tuberculous sputum becoming dried and pulverized and being stirred up into the air which human beings inhale. The strictest spitting regulations, that is to say, to forbid and absolutely prevent expectorating anywhere within-doors except in a proper receptacle, is the first condition which must be insisted upon. Not only in the homes, factories, and workshops should there be proper sputum receptacles and strict spitting regulations, but the same care to prevent tuberculous or other possibly infected spittle from drying and pulverizing, should be exercised in public buildings, railway stations, assembly rooms, halls; in short, everywhere where people congregate.

All stationary sputum receptacles or cuspidors should contain a sufficient amount of water to prevent the sputum from drying, and should be covered. I insist on a cover, because flies and other insects often partake of the contents of an uncovered spittoon and carry away enough infectious material to become real propagators of the disease. For example, the fly may carry on its feet any number of tuberculosis germs and deposit them on articles of food. Living tubercle bacilli have been found in the excrement of flies in the sickroom, and even in the dust of crumbled dead flies bacilli have been found which had retained their virulence.

The ideal public cuspidor is, to my mind, the elevated self-flushing one with supply and waste-pipe and cover. To the close observer it is an interesting psychological phenomenon that a negative command is never as readily obeyed as a positive one. I firmly believe that if we provide a sufficient number of spittoons in our public places and put over them a sign reading "spit here," there will be fewer evidences of promiscuous spitting on the floors than where the anti-spitting signs read "It is forbidden by law to expectorate," etc.

Expectoration in the Streets

Regarding expectorating out-of-doors, every city and town should have proper regulations which should be firmly enforced. If we cannot have stationary self-flushing cuspidors in our streets, let us at least try to educate or compel people not to expectorate on the sidewalks where the matter may come in contact with the shoes or clothing of pedestrians, but into the gutter whence it will be most readily carried away into the sewers with the next rain or flushing of the street.

Then there is the individual care which the consumptive should exercise outside of as well as in his home. To recommend the use of a pocket-flask of glass or metal or a pocket-purse of pasteboard or paper is useless. Few consumptives will be willing to use as sputum receptacle in public anything that will attract the attention of other people to their malady. While pocket- or other portable cuspidors are of value in sanatoria and hospitals, they are very rarely used outside of such institutions. I have

known patients to object very strongly even to the use of Japanese handkerchiefs in public for the very same reason which I have given for their disinclination to using pocket-cuspidors.

On the other hand, though, I have found that patients are perfectly willing to use very cheap handkerchiefs, or cheap muslin cut up in squares resembling handkerchiefs, to expectorate into. I therefore advise them to supply themselves with a number of these make-believe handkerchiefs on going out in the morning and place the soiled ones in a separate pocket (or bag for a woman) and burn them up on returning home. It is wise to have the pocket or bag which serves as receptacle for the soiled muslin cloths lined with some impermeable material.

Provision for Bed Patients

Bed patients should have within easy reach light metal, easily managed sputum cups with cover. Pasteboard spit-cups in metal frames are also very recommendable for bed patients. In the last stages of the disease patients are often so feeble as not to be able to rise in order to make use of even the lightest sputum receptacles. In such instances the nurse should provide moist cloths to receive the sputum and these should be burned before they have a chance to dry. If the sputum cannot be disposed of by fire with its receptacle of cloth, paper or pasteboard, it should be poured into the toilet. The saprophytic organisms in the sewage usually suffice to annihilate the tuberculous germs.

Necessity of Care of Dairy Animals

Against the danger from an ingestion-tuberculosis the state and municipal authorities should protect us by the enactment and strict enforcement of good bovine laws and pure-milk ordinances. Infection from tuberculous meat seems rare; from tuberculous milk it is probably a great deal more frequent. While pure raw milk is better than pasteurized or sterilized milk, where there is doubt as to the milk's purity, conscientious pasteurization seems indicated and justified.

Inoculation-tuberculosis has its origin most frequently in wounds caused by nicked porcelain or glass spittoons and the entrance of some tuberculous matter into the wound. Education and prudence, and the replacing of porcelain spittoons by unbreakable metal spittoons are the best means to prevent this source of infection.

Individuals should be instructed that whenever they wound themselves, they should, in order to avoid tuberculous or other infection, let the wound bleed freely so as to wash away the infectious matter, then cover it with a clean cloth previously placed in hot water, then seek the advice of a physician who will dress the wound antiseptically. The physician or student should remember these precautions if he should have been so unfortunate as to wound himself in performing autopsies in dissecting a tuberculous body.

Inoculation-tuberculosis has resulted in a number of instances from tattooing. Professional tattooing is usually practised by men who are invalids, too weak to do hard work, and very often his invalidism is due to tuberculosis. Men who follow the profession of tattooing are often in the habit of dissolving the colors necessary for their work with their own saliva. Hence the infection when the operator is tuberculous. The remedy for this source of infection lies in warning the laity against the danger which may arise as a result from this barbarous practice of decorating the human skin.

Danger from Circumcision

Physicians should be familiar with a less but nevertheless sufficiently frequent cause of inoculation-tuberculosis. I refer to that which may arise through ritual circumcision, performed according to Jewish rites when the operator happens to be consumptive. It is well known that, through lack of skill in after-treatment, secondary hemorrhage and wound infection have ensued. Too many a young life has thus been needlessly sacrificed.

The operation of circumcision, when skilfully and rapidly performed, is in itself trifling, but the sucking of the prepuce afterward makes it dangerous. Since it will be difficult to stop this practice by a

simple protest on the part of physicians, and as the law cannot interfere with the free exercise of a religious rite, I would suggest as a remedy that only such persons should be allowed to perform circumcision who have shown the necessary skill before a medical board of examiners, and that every time they are called upon to perform the rite, they should submit themselves to a medical examination. Only when bearing a certificate from a regular physician, stating the absolute freedom from specific diseases, should they be allowed to perform ritual circumcision.

As another reliable measure against the possibility of inoculating the child, when the parents insist upon the orthodox method of circumcision, is the suction by the aid of a glass tube, as practised in France and Germany.

Coughs and Kissing

Droplet infection, that is to say, infection during the socalled dry cough through the expulsion of small particles of bacilliferous saliva, may cause either ingestion or inhalation tuberculosis. The remedy for it is to teach the patient to hold his hand or handkerchief before his mouth when coughing or sneezing.

Against the danger of infection which may arise from kissing, or from the use of the spoons, forks, or glasses of consumptives without having had them thoroughly cleaned in boiling water, education alone can serve as a preventive.

A child should be taught not to put any articles in his mouth which may have been in the mouth of another. He should be plainly told that to swap apple cores, chewing gum, half-eaten food, whistles, or beanblowers might give a disease, not only tuberculosis, but also diphtheria, whooping-cough, or measles.

One thing must always be remembered. Without the hearty cooperation of the patient no appreciable result in the prophylaxis of tuberculosis can be obtained. The consumptive should be made to understand that by helping to remove various causes of infection whereby others may contract the disease, he also lessens the danger of he himself becoming reinfected. Those living and dealing with the consumptive should be firm when firmness is needed, but should be kind to him always and bear in mind that the honest, conscientious consumptive can be very safely associated with. To treat him as if his presence would mean danger is cruel, unwise, and inhumane. The more kindly he is treated, the more willing will he be to obey the instructions appertaining to prophylaxis.

Indirect Causes of Transmission

While direct bacillary transmission of tuberculosis, through the placenta, cannot be denied, for it does occur occasionally, it is rare enough to be considered a negligible quantity, and the frequency of tuberculosis in children must be ascribed to postnatal infection. Very often it is the close contact with the tuberculous mother, more rarely with the tuberculous father, which causes the child to become tuberculous.

Having inherited a predisposition which is in reality nothing but a physiological poverty, such a child without the natural defenses against the invasion of disease becomes a victim to that one to which it is most frequently exposed. If such a child is removed from the sources of postnatal infection and raised in healthful, sanitary environments, and attention paid to its normal physical and mental development, the probabilities are that it will develop into a strong, healthy man or woman and never have tuberculosis. Of course, such a child should not be sent to school before the age of eight, and when it does go it should attend an open-air school. It should not be burdened with home lessons, but have plenty of time to play and to sleep.

A predisposition can be acquired at any age through disease, certain occupations, privations or want, bad housing and underfeeding, overwork, syphilis, and, last but not least, alcoholism.

All exanthematous diseases of childhood—measles, chicken-pox, scarlet-fever, etc., predispose the child to tuberculosis; so does diphtheria. All diseases of the respiratory

organs in child and adult life (bronchitis, grip, whooping-cough, pneumonia or pleurisy) predispose to tuberculosis. To prevent these convalescents from contracting the disease, great care should be exercised not to expose them to possible infection.

The Factor of Occupation

All indoor occupations and particularly such as expose the individual to the constant inhalation of irritating dust (tailoring, weaving, stone-cutting, etc.) are particularly prone to render an individual susceptible to the invasion of the tubercle bacilli. The enactment and enforcement of proper workshop and factory laws, education of employer and employee as to proper ventilation and proper precautionary measures to limit the danger of contracting occupation-diseases, are the remedies for overcoming these predisposing factors.

Child-labor or overwork on the part of adult men and women are factors which must be enumerated as strongly predisposing to tuberculosis. They undermine the system and render its germicidal and phagocytic powers ***nil***. The remedies are abolition of child-labor in all its forms and reasonable labor laws which make the conditions rendering the honest laborer liable to disease by overwork impossible.

Venereal diseases can only be prevented by education, repressive and wise humanitarian efforts, but not oppressivly. The same, I believe, can be said of alcoholism. But of alcoholism it must be said that, while it often causes poverty and want, bad housing and underfeeding, it is not infrequently the result of poverty and want, lack of air, and insufficient food.

Housing of the Masses

The sanitary housing of the masses will reduce the number of individuals addicted to alcoholism as well as those who contract tuberculosis. A good house, well lighted, well ventilated, and well kept by the wife trained in housekeeping and good cooking, a good though plain meal well cooked and appetizingly served, will counteract to a very appreciable degree the temptations of the saloon.

Tuberculosis always breeds more frequently in congested districts. The more dense the population, the more tuberculosis; and the worse the tenements, the more deaths from tuberculosis. There should be more model tenement houses offering sanitary homes to the laborer who must remain in the city and be near his workshop. However, it must be borne in mind that the rental for such sanitary homes for the laborers should not be so high that he and his family must deprive or stint themselves of other necessities of life. When one considers the present unusually high prices of articles of food and clothing, the rental the average laborer is called upon to pay should not exceed one-fifth of his income.

Overcrowding and Immigration

The tendency of country people to move to the city and of immigrants from foreign countries to cluster in large centers of population is unfortunate. These latter should be distributed in our as yet thinly populated states and induced to persue agriculture and horticulture. The tide of emigration from village to city should be reversed. If tuberculosis has made its appearance in a family living in a large city, the physician should exert all his influence to induce, especially the younger members, to migrate to the country and seek outdoor occupations.

Statesmen should protect the interests of farmers, so that farming will have more attraction to the rising generation than it has had in the last few decades; and philanthropists should aid the statesmen by endowing institutions for instruction in scientific and profitable agriculture, and also by providing healthful amusements, good libraries, and other educational institutions in country districts, thus making living outside of large cities more interesting and attractive to young people; in short, the love of nature and life in the open air should be more cultivated. In the proportion in which this is done tuberculosis will decrease.

It is beyond the scope of this paper to enter into a discussion of all the social fac-

tors which are indirectly responsible for the prevalence of tuberculosis.

All that I can say in conclusion is, that just in the degree that we improve the social conditions of the masses, the housing and living conditions, the opportunities for happiness and the enjoyment of life, in so much will we reduce tuberculosis among them. In other words, in as far as we solve the social problem, so much will we come nearer to solving the tuberculosis problem and will see the dawn of the day when the Great White Plague shall be a plague no more.

The Specific Treatment of Tuberculosis

Its Modern Theory and Practice

By H. J. ACHARD, M. D., Chicago, Illinois

A SPECIFIC remedy is one which has a particularly favorable action upon a certain disease, an action which it does not exert in other affections, and which is not exerted in the same disease by other remedies. Practically the only truly specific remedies which we have known, until recently, are mercury for syphilis and quinine for malaria.

From unknown times physicians have searched for a specific remedy in tuberculosis, but without success. Cornet describes the chemical "*specifica*" (American edition, Cornet's "Tuberculosis," 1904, p. 579. Consult also Lawrason Brown in Klebs' "Tuberculosis," 1909, p. 575) which have been advocated and have had each its vogue.

With the discovery of the tubercle bacillus the attempts to discover an antagonistic remedy were renewed with great energy, but again resulted in failure. It was found that chemicals which, *in vitro*, would injure the bacillus, could not be introduced into the organism in sufficient strength to destroy the bacilli in the body without injury to the latter, the more so as the tubercle bacilli are protected against the action of chemicals by their fatty or waxy capsules.

Koch's Discovery and Early Experience with Tuberculin

In 1890 Koch announced the discovery of a remedy which immunized guinea-pigs against tuberculous infection and which was capable of arresting the process, even in animals already in an advanced stage, of general tuberculosis. I cannot, here, relate the sad history of the first tuberculin era, the principal data of which can be found in the books by Cornet, Klebs, Pottenger and others.

Disappointing as were the results, they nevertheless contained some valuable lessons, among others, that tuberculosis cannot be treated solely by remedies which destroy the tubercle bacillus, for instance by antibacterial remedies, but that the intoxication due to the tuberculous toxins, as well as the frequently coexisting mixed infection and intoxication, also require attention. In this country it was first of all Dr. Karl von Ruck of Asheville, N. C., who persisted in the search for specific remedies, and for a space of time he stood practically alone in his position.

Healing in Tuberculosis

If we examine a tuberculous lung in which the tuberculous process has healed, we find that the healing process consists in the formation of a fibrous capsule enclosing the focus, while in progressive disease the tuberculous area caseates and softens, so that the lung-tissue is gradually destroyed. It has been found, at first by French investigators, that the fibrosing as well as the necrosing action is not due directly to the tubercle bacillus, but to the action of different toxins elaborated by it; accordingly, as the one or the other kind predominates, arrest or progress of the tuberculosis results.

The healing or cure of tuberculosis also depends upon the resistance which the organism opposes to the action, both bacterial and toxic, of the tubercle bacillus. The organism does not by any means remain passive on being invaded by harmful bacteria, but resists their action by mechanical and by chemical means. The former find their expression in the action of the leukocytes which engulf the bacteria and carry them to the nearest lymph-nodes, and these, according to Metchnikoff, destroy, or "devour," them (phagocytosis).

The chemical means lie in certain substances, called antibodies, which exert a chemical influence upon the tubercle bacilli and tend to neutralize the harmful action of their toxins. Of such antibodies the agglutinins, precipitins, bacteriolysins and opsonins have especially been investigated and have become the subject of an enormous literature. For our purpose it will suffice to say that the aim of treatment by general methods is to increase the general resistance of the organism against harmful influences, while it is the aim of specific treatment to stimulate the production of antibodies, both antibacterial and antitoxic, which are specific for the existing disease-germs, if these antibodies cannot be introduced into the organism already formed as is the case in serum treatment.

Active and Passive Immunization

If we then apply the term "immunization" to the specific treatment of infectious diseases in general, and of tuberculosis in particular, we call the introduction of immunizing substances (such as are obtained from tubercle bacilli or their culture products) "*active immunization*," and the introduction of immune substances (immune serum from immunized animals) "*passive immunization*." It is the latter only to which the term serum- or lymph-therapy is properly applicable, because only here is a serum employed. The principal antituberculosis sera known are those of Marmorek and of Maragliano.

The remedies used for active immunization are sometimes wrongly described as tuberculins, without any differentiation as to their derivation and nature. Tuberculins are preparations obtained from the culture-fluid upon which tubercle bacilli have been grown. They contain the soluble toxins that were separated from the growing bacilli. Tuberculins act chiefly as stimulants upon the periphery of the tubercle and often cause local inflammations which are dangerous. They may produce a degree of immunity by specific proteins derived from the bodies of tubercle bacilli, especially if the preparation is made from the fluid of very old cultures in which some of the bodies of the tubercle bacilli have become disintegrated and their proteins extracted or dissolved in the fluid. This class of remedies is represented, for instance, by the original, or old, tuberculin of Koch, and by the bouillon filtré of Denys.

The bacillus-emulsion of Koch, the watery extract of tubercle bacilli of von Ruck, and similar preparations differ from the tuberculins in that the culture-fluid does not enter into their preparation. The tubercle bacilli are carefully collected and the culture-fluid is washed off, after which the bacilli are ground up. In the case of the watery extract of tubercle bacilli, the bacilli, after washing, are first extracted with alcohol and ether until all their fats and waxes are removed, because these do not possess any immunizing value and are in fact harmful. Preparations derived from the tubercle bacilli themselves arrest the growth and multiplication of tubercle bacilli in the tissues; they stimulate the production of specific antibodies from the tissue-fluids (or from the leukocytes?) and thus produce an active immunization.

The Value of Specific Treatment

The enthusiastic adherents of the climatic-hygienic-dietetic method of treating tuberculosis claim that this method suffices in itself to bring favorable cases of tuberculosis to be arrested, and they do not always show a very intelligent discrimination in determining their favorable cases. While it is true that these general methods are of the greatest value and importance and that they may even, in a small number of cases, lead

to an arrest of the disease and to an apparent cure, they unfortunately show such desirable results only in a comparatively small percentage of cases. Pottenger has, from the literature, collected reports on 611 cases in the first stage of the disease treated in sanatoria by the most approved general methods, but without specific remedies, and resulting in 391, or 64 percent; of apparent cures, while of 589 cases in the first stage treated with tuberculin, in addition to the other methods, 496, or 84.2 percent, were apparently cured.

Drs. Karl and Silvio Von Ruck give an interesting tabulation of their experiences in consumptives treated by general methods alone, and with tuberculin, or watery extract of tubercle bacilli, in addition.

In 782 cases treated from 1888 to 1908 without specific remedies the results were on discharge:

Apparently recovered.... 90, or 11.9 percent
Improved .....238, or 30.5 percent
Stationary or progressive..454, or 57.6 percent

Of 723 cases which, in addition to the usual methods were treated with tuberculin or some of its modifications, the product being derived from the culture fluid upon which tubercle bacilli had grown to maturity, there were on discharge:

Apparently recovered ....266, or 36.8 percent
Improved .....310, or 42.8 percent
Stationary or progressive..147, or 20.4 percent

Of 1503 cases that were treated with the watery extract of tubercle bacilli, the culture-fluid not entering into the preparation, there were on discharge:

Apparently recovered ....834, or 55.5 percent
Improved .....508, or 33.8 percent
Stationary or progressive..161, or 10.7 percent

In their report for the years 1905 and 1906 they tabulate the results of over 100 other physicians who had likewise employed the watery extract of tubercle bacilli in institutions and in general practice. Their material comprised 2,183 cases, and the clinical results obtained differ but little from their own. Of these patients there were on discharge:

Apparently recovered ...1098, or 50.3 percent
Improved ..... 639, or 29.4 percent
Stationary or progressive. 446, or 20.3 percent

A very serious drawback to the exclusive employment of general methods is that the results are not permanent. Inquiries to determine the permanency of results from general methods, including climatic treatment, made by Von Ruck and by others, have shown that of all cases discharged as improved or apparently cured there were less than 10 percent that had not seriously relapsed or succumbed to their disease in the course of from two to five years thereafter. On the other hand, of 602 patients treated by Von Ruck with the watery extract of tubercle bacilli and who had been dismissed from two to ten years prior to the inquiry there had been dismissed as apparently cured, 400, and of these had remained without relapse 320, or 80 percent. There had been dismissed as improved 202, and of these had remained without relapse 94, or 46.5 percent. We see thus that the addition of specific remedies to the general climatic, hygienic and dietetic methods of treatment not only offers far better clinical results but affords in addition a greater promise that the attained results will be preserved.

Adaptation of Remedies to Cases

The selection of cases suitable for specific treatment, the determination of the remedy to be employed and of its dosage and frequency of administration is not a matter lightly to be undertaken. The problems involved in the question of active immunization are many and varied and require careful study. It is the writer's conviction that this method of treatment should only be undertaken after a course of study and training with one who has mastered it.

It goes without saying that the mere application of a few doses of tuberculin, tubercle-bacilli emulsion or watery extract of tubercle bacilli does not complete what is called specific treatment. Not only must the action of the remedy and of the dosage employed be carefully watched, and changed as required by the altered condition of the patient, but the general hygienic and dietetic rules must be insisted upon and carried out just as faithfully. The patients must be

watched even more carefully than under general methods alone, and the daily, weekly and monthly variations in their condition must be fully considered.

The Purpose of Treatment

Whatever treatment of tuberculosis is adopted, it has the purpose of rendering the tubercle bacilli harmless and incapable of multiplication and of neutralizing their toxins, quite aside from the fact that the physical condition of the patient, as affected by the disease, must be attended to and that all annoying and disturbing factors must be met symptomatically. If the general resistance of the organism is sufficient to cause the production of antibacterial and antitoxic substances to lead to the desired result, specific treatment, is not needed. This is what actually occurs in the great majority of persons who become subject to tuberculous infection.

It has been demonstrated that at a conservative estimate at least 60 percent of all adults have at one time or another been infected by tubercle bacilli, but in most of them a progressive tuberculosis has not developed, since only about 12 percent of the population die of consumption. In the remaining 48 percent the natural resistance must evidently have been sufficient to arrest and heal the tuberculous process and to hold the tubercle bacilli harmless.

The Role of Nuclein

From a contribution by Ward of St. Louis (*Med. Record*, March 26, 1910) and from a study of the literature we are of the opinion that this natural resistance depends, at least to a considerable degree, upon the nuclein contained normally in the body-cells. Ward has shown that by the intravenous administration of nuclein there occurs not only a hyperleukocytosis, as had been described by Vaughan in 1894 and has since been verified frequently both here and abroad, but the number of red cells and the percentage of hemoglobin are increased. Of 15 patients on whom he gives detailed reports, 9 were apparently cured, 4 were improved, and 2 died.

The administration of nuclein cannot strictly be considered as a specific method of treatment but must be explained rather as acting in the direction of increasing the natural organic resistance to harmful influences. By its twofold action, the hyperleukocytosis and the increase of red cells of and hemoglobin, nuclein meets two important indications. The first action is an antibacterial one and assists the body in destroying the harmful bacilli. The second action tends to alleviate the anemia which is an almost constant symptom of tuberculosis, and through this very fact it increases and improves the metabolism and function of the body-cells, thus enabling them to resist and overcome the injurious influence of the tuberculous toxins. More, by a stimulation of the general cell activity the process of repair is probably encouraged and the tuberculous lesions are arrested in their destructive process.

Years ago Professor Vaughan asserted that nuclein is an ideal remedy in tuberculosis. It is being employed and investigated largely, both here and abroad, and while the literature on the intravenous administration of the remedy, as proposed by Ward, is as yet very small, the writer is convinced that it presents many advantages over the oral and the hypodermic application, the first of which is uncertain in its effects, while the second is painful.

The writer hopes to have shown that the addition of specific remedies or of nuclein to the general methods of treatment are valuable in producing better and more lasting results. The careful physician is fully competent to employ either method, if he will take the trouble to study the problems involved, and the advantages accruing to his patients, and indirectly to himself, from the addition of these powerful remedies to the usual methods are immeasurable.

Intravenous Injections in Tuberculosis*

A Novel Method of Treating Pulmonary Consumption

By C. A. SHEPARD, M. D., Needles, California

THE method of treating tuberculosis by intravenous injection of tuberculin has not received the recognition I believe it should have. This method, perfected by Dr. Rothschild several years ago, while studying under Prof. Fraenkel in Berlin, and later used by him in San Francisco with such marked success, is, in my opinion, the most successful treatment we have at our command today.

Equally satisfactory results seem to be obtained from different preparations of tuberculin, i. e., the watery extract of tubercle bacilli, dried bacilli in emulsion, Koch's old tuberculin, but, as Dr. Trudeau of Saranac Lake has pointed out, as much depends upon the method of administration as upon the kind of tuberculin employed.

If there ever was a remedy that demanded therapeutic exactness it is tuberculin. Here we are dealing with a disease which is grave, and a remedy most powerful for good if administered rightly, powerful for evil if administered wrongly.

Artificial Immunization the Aim of Tuberculin Treatment

The specific treatment of tuberculosis with tuberculin is based upon the principle of artificial immunization. The exact rôle played by the antibodies, agglutinins, opsonins, etc., is as yet imperfectly understood, but we know that they are part of nature's plan to protect the body against bacterial invasion and action.

Hollister, says on the subject of bacterial vaccines: "There are four main resisting forces in the blood against bacteria and their toxins: bactericidal, bacteriolytic, agglutinating and phagocytic."

The organism has two ways of resisting invasion by microorganisms: (1) by the specific action of the blood-serum, which may be natural or acquired; (2) by phagocytosis.

The blood has no bactericidal, bacteriolytic or agglutinating power on the strepto-, staphylo- and pneumococci, and while it has some agglutinating power on tubercle bacilli, it has no bactericidal or bacteriolytic power upon them. The organism, therefore, must depend almost entirely upon phagocytosis for its defense against the tubercle bacillus.

Now, it is well known that tuberculin markedly increases phagocytosis if given either subcutaneously or intravenously. But this phagocytosis becomes much more apparent when given intravenously and especially so when combined with atoxyl. Atoxyl has for years, and with great success, been used by the Germans, to produce this effect, in cases of anemia, of malaria and of sleeping sickness.

The Technic Employed

In using the intravenous method of administration we must be very careful that the solutions are absolutely sterile and that fresh solutions are used each time, care also being taken in regard to needles, syringe and site of injection in order to secure absolute asepsis.

As to the administration of remedy: I use a "Sub-Q" aseptic tuberculin syringe of 10 cubic centimeter capacity and graduated from 1 to 100, each division being 1-10 cubic centimeter, or 1 cubic decimeter. When using a 1-10 of 1 percent (0.1 p. c.) solution of tuberculin (TR), each division of the scale represents 1-100 milligram (0.01 mg.) of the preparation.

I fill the syringe to the 5 mark with a 15-percent sterilized solution of atoxyl, then introduce the desired amount of tuberculin, and then add sufficient of the atoxyl solution to bring it up to the 15 or 20 mark. One

*Read before the Riverside County Medical Society, Oct 2, 1908.

Gram of a 15-percent solution of atoxyl would represent 0.12 to 0.15 Gram of this drug.

Koch and others have recommended and used much larger amounts, but have had to report loss of vision in consequence, in some cases. Those who have been using the smaller amounts have encountered no trouble.

The Technic of Injecting

Now as to the technic of the operation. I have the patient open and close his hand rapidly, for a few minutes, then I apply the elastic bandage above the elbow (this causes the veins in the hollow of the elbow to become prominent); after cleansing the site with alcohol I inject into one of these veins very slowly, withdrawing the syringe rapidly; then I loosen the bandage and elevate the arm for a few minutes and place over the site of injection a drop of collodion.

Some have spoken of the danger ot thrombosis in using an intravenous injection. I have given hundreds of injections, but never had this happen. I think if one is very careful and treats this strictly as a surgical operation there is no danger.

In using the intravenous method one avoids the local reaction, and being enabled to use much smaller doses, can avoid the general reaction while at the same time producing phagocytosis much more quickly than by the subcutaneous method. This has been proved conclusively by experiments conducted on guinea-pigs by Dr. F. M. Kelly of Needles, California, whose results will appear in *The Marine Hospital Bulletin* later on.

Avoiding Reaction the Fundamental Principle

In the therapeutic use of tuberculin the fundamental principle should be to avoid reaction. The best results are achieved when the amount of tuberculin used falls just short of producing a reaction, extending the treatment without attempting to shorten the time required, and increasing the dose carefully as immunity progresses.

The results are better and quicker if the injections are given when the patient has no fever, so I generally have the patient go to bed and then commence treatment, but if after a few weeks' rest the temperature shows no tendency to go down I begin with about 1-100 milligram. After a little experience one can quickly learn how much tuberculin each patient will stand, and be governed accordingly.

It is a mistake to try to shorten the time of treatment by increasing the doses too rapidly or decreasing the intervals between injections. When full doses have been reached they should not be continued indefinitely for fear of exhausting the patient's power to respond to the stimulus of the injection of toxin with the formation of antibodies. It is well known that the horse's power to produce antitoxin can thus be exhausted; and when full doses can be reached, no matter how long it may have taken, it is better to discontinue treatment for about three months and then resume. The secondary courses of injections are so well tolerated that the patient can be carried to full doses very rapidly, often without any reaction at all.

Importance of Rest

I have spoken of rest in bed, and this is of vast importance in the treatment of tuberculosis. I know that my results are better in those cases in which I have been able to put them at absolute rest than in those that cannot be kept there for financial or other reasons.

Rest has a beneficial effect on the cough, dyspnea, fever and the heart. The heart has to bear the brunt of the fight in tuberculosis, owing to the enormous strain to overcome the resistance offered to the pulmonary circulation, while it shares also in the loss of muscular tissue; therefore rest more than any one thing will strengthen it at such a time. Any patient with a temperature of 100 degrees or more should remain in bed until this has been reduced, irrespective of how long it takes. Then there is the beneficial moral effect of an increase in weight which is obtained more rapidly by rest in bed. Nothing has a better effect on the mental condition of all patients who have

been losing weight than to be gaining; and with that we come to the question of diet.

Dietary Regimen of the Tuberculous

I do not believe in a fixed diet for tuberculous patients, because they are sick too long. It is much better to cater to their appetite and give them a varied diet, the food to consist especially of beef or mutton cooked rare, baked potatoes, boiled rice, boiled beets, fresh green vegetables, fresh fruits, fresh eggs, bread and lots of butter, milk, cream, cocoa, chocolate; but no tea, beer, wine or alcoholic drinks. They ought to take from one to eight eggs daily, and from one to four quarts of milk in addition. If milk disagrees they may use it in some modified form, such as Eskay's food or Horlick's malted milk, for instance. A well-nourished system is naturally more resistant than a system that is underfed, and a patient is more cheerful and more willing to carry out orders as soon as he notices a continued improvement in weight.

Fresh Air and Sunshine Paramount

The greatest possible amount of fresh air and sunshine that a patient can absorb in twenty-four hours is a valuable aid to any line of treatment, and in no other part of the country is it as easy to live outdoors the year round as it is here in southern California. I instruct my patients to be out, but sufficiently protected, whatever the weather, except in driving rain or dusty wind (sleeping out the year around if possible, but if circumstances or surroundings prevent and they are compelled to be inside, to have the windows and doors open); to have the sunniest and airiest room possible, and never to occupy a room heated by a hot-air furnace; no bed-fellow under any circumstances, and no room-mate if possible.

Case 1.—W. C. G., age 32, weight 125 pounds, no family history. Trouble commenced with hemorrhage in May, 1906; had been losing weight; much cough and expectoration. Examination of sputum showed presence of tubercle bacilli and large numbers of tissue-cells. Physical examination showed dulness over left apex and upper portion of middle lobe of left lung; rough bronchial breathing and râles. Commenced treatment February 4, 1908, giving 1-20 mg. tuberculin and 15-percent solution of atoxyl. Ceased treatment in August, 1908. Weight now 156 pounds; no cough or expectoration; breathing a little harsh over the apex of the left lung. In excellent condition at the present time.

Case 2.—F. E. M., age 35, civil engineer, no hereditary taint, October, 1907, had an attack of pleurisy lasting three or four days; two days later hemoptysis. Examination of sputum showed tubercle bacilli present. Physical examination showed rough breathing in both apices and dry râles. Commenced treatment November 10. On February 4, sputum showed absence of bacilli and tissue-cells. Patient discharged cured May 4. Gain in weight 32 pounds; condition normal at present time.

Case 3.—H. U. G., residence Humboldt County, age 40, weight 128 pounds; previous history negative. Had pneumonia of left lung November, 1907; abscess in the same lung, January 5 expectorated one cupful of green pus. Physical examination showed marked consolidation over apex-lobe of left lung and of lower portion of right posterior; mucus and coarse râles; temperature 99° F., respiration 22, pulse 110. Examination of sputum showed tubercle bacilli, large number of streptococci, and some specimens of bacillus pyocyaneus, also tissue-cells. Commenced treatment November 6. The following May he was called home suddenly. Weight then 141 pounds; no cough excepting in the morning; expectorating one-sixth as much as he did on starting treatment.

Case 4.—J. H. C., New York, young man 20 years old. Father died of tuberculosis. Trouble started with grip followed by cough, expectoration, night-sweats and two attacks of hemoptysis. Patient was examined by Dr. Rochester of Buffalo, and declined treatment. Apices of both lungs badly affected, morning temperature 101° F. to 102° F., afternoon 103° to 104°F.; large cavity in left upper lobe; normal breathing in right middle and lower lobe. Patient sent to San Francisco June 1907,

put to bed for three months under the usual treatment; returned to Needles December, 1907. No fever, dyspnea or night-sweats; weight increased from 106 to 134 pounds. Has taken treatment since, with further gain in weight to 147 pounds. Was examined by Dr. Rochester in Buffalo in August last, and the change was pronounced "wonderful results" by the doctor. I quote this case as it is the most advanced one that has been treated with tuberculin and atoxyl, being in the beginning of the third stage, when results usually are practically *nil*.

I treated, last year, nine cases by the intravenous method; five of the patients are at work and free from symptoms at the present time; I do not know the present condition of one; three are still under treatment, and I have ten new cases this fall, all of which are responding nicely.

Now, you will see that the number of my cases is small and the time of observation short, but this is only intended as a preliminary report. I hope by this time next year to be able to report a great many more cases treated by this method. But these few cases and results confirm what Dr. Rothschild reported in a paper read before the county medical society of San Francisco, and the results obtained in many cases, I had the pleasure of seeing in his practice.

Just a word about the latent cases. We often have patients coming to us with slight cough, loss of weight, impaired appetite, and who will show a reaction to tuberculin, and yet examination of sputum shows absence of bacilli. This one thing (depending on the bacilli in the sputum) has in the past caused numerous errors in diagnosis and unnecessary delay in starting treatment. In every case the sputum should be examined, but yet too much dependence must not be placed upon results obtained—a case of pulmonary tuberculosis may show a negative sputum, just as a case of nephritis may show a negative urine. It is entirely possible to make a diagnosis of pulmonary tuberculosis before the condition is suspected by the patient or his association, and thus a greater responsibility is placed upon us to recognize these latent cases.

Any physician with patience and perseverance who will thoroughly acquaint himself with the disease, its physical signs, clinical course and pathology, who will study the remedy, gain a complete control of the patient, and proceed cautiously, using the intravenous method, together with forced feeding on a varied diet, fresh air, sunshine and rest, and having the patience to work and wait for results, cannot help but achieve success.

Postscript: I may be permitted to add here a few additional words regarding further experience since the foregoing was penned. This addition was written one and one-half years after the paper proper.

During the year just closed I have had under treatment 49 cases, with the following results: There were 14 cases in the incipient stage. In these all symptoms disappeared, and upon repeated examinations and tests no reactions could be produced nor bacilli found. Up to the present time all are in splendid condition. The length of treatment varied from three to nine months. Gain in weight, 11 to 40 pounds. Of 30 moderately advanced cases there were 20 apparently cured, 6 greatly improved, in 4 the disease was arrested, in 2 there was no improvement. Length of treatment, from six to twelve months. Of 5 third-stage cases 2 have died, in 1 the disease was arrested, 1 showed no improvement, 1 was greatly improved. A young man, 21 years old, is gaining so rapidly that I believe it is only a question of time and perseverance for him to make a good recovery, crippled, it is true, but able to live a comparatively useful life.

I think these results should teach us the value of having the disease recognized in the latent stage, to impress upon the general practician the importance of having their patients placed under treatment as quickly as possible to get the best results. It will usually be found that these patients are finicky eaters, that they tire easily, are below normal weight, are anemic, nervous and irritable, and have a tuberculous family history. A Moro test, or in case it fails, as it will do sometimes, an intravenous injection of from 1-10 to 1-5 milligram of

tuberculin, will usually show a definite reaction.

Until the general practician recognizes these early cases and can treat them himself, it behooves those who make a special study of the disease to appeal to the former for an earlier diagnosis and to send their patients in a curable stage.

The value of the *intravenous* method is that we can use about one-fourth of the amount of tuberculin required subcutaneously, to produce the same reaction and results, that the reaction appears sooner, the negative phase is shortened and the positive increased, as determined by the opsonic index, and that it is absolutely painless.

The Therapeutics of Pulmonary Tuberculosis

With Special Reference to the Use of Medicinal Agents

By GEORGE H. CANDLER, M. D., Chicago, Illinois

THE man attempting to cover, in such a brief article, the therapeutics of pulmonary tuberculosis must of necessity have either a very limited conception of his subject, or else entertain an exaggerated idea of his ability to present certain basal truths extracted from the great mass of material—practical or theoretical, chimerical or scientific—which has accumulated during the passing of the years. It is strange, indeed, in these days of "Tuberculosis Congresses," with profession, press and pulpit working shoulder to shoulder, to defeat this dread plague, to hear physicians grown gray in the harness and young men just beginning practice alike asking insistently, "What *is* the most effective treatment for phthisis pulmonalis?"

Of Cures there Are Many

From one direction comes the answer, "Fresh air and forced feeding," from another, "Tuberculin." One savant cynically affirms: "There is no drug or combination of drugs which will act directly upon the tuberculous process; the comsumptive is doomed. It is your duty to isolate him, to disinfect the premises he has inhabited, and to expend your energy in preventing further spread of the disease." Another equally learned authority "begs to differ." It "appalls him to see such baseless assertions advanced!" The consumptive who would recover has but to "leave his home (wherever it may be) and hie him to the pinewoods, the seashore, the Bermudas, or the mountains of New Mexico, and live out of doors—consuming meanwhile large quantities of fats—and a cure is but a matter of time." Still another erudite individual urges the use of the x-ray, oxygen inhalations, or, better, artificially produced ozone, and "systematized deep breathing;" while "creosote internally and externally, with rest; large quantities of nutritious food, and an outdoor existence" is the "*one* successful treatment," according to one recent well-known writer. However, at the very same time a brochure appears in which another author urges doctors to relinquish both rest and creosote and to push mercury and arsenic, and keeping the patient "on the go" in the open. Even Bier's idea of localized hyperemia has been seized upon, as a possible cure for phthisis.

"Age does not wither" nor custom stale the "infinite variety" of cures for consumption, and, yet, today, as fifty or one hundred years ago, phthisis destroys more valuable lives than do any other two diseases of civilization. Since Jenner discovered vaccine and annihilated variola physicians have looked for some equally positive method of destruction for the tubercle bacilli.

The Story of Alabone

In 1877 one Edwin W. Alabone, M. D., F. R. M. S., M. R. C. S., of Lynton House,

Highbury Quadrant, London, England, startled the doctors of Great Britain by stating that he had cured, was curing, and could continue to cure "consumption" by giving to the afflicted a potion of lachesis, the homeopathic snake venom.

The profession scoffed—the consumptives believed, and Alabone, in a few years, was able to exhibit a list of "cured patients and patrons" several yards long. Lord bishops, right reverends, dukes, lords, and simple baronets swore that Alabone was curing phthisis. At least a hundred "reputable practicians" attested to the same thing. The fame of the "Alabone cure" spread, and in Brussels Alabone was presented with the diploma, ribbon and decoration of the red cross, after having "cured beyond peradventure" several consumptive citizens of that burg.

Doctors in other countries adopted his methods and succeeded extraordinarily. Honors and wealth came to him from all over the earth; *but*—the Council of the R. C. S. derided the man and his methods and, after a long and bitter fight, expelled him from the college, dubbing him a quack and mountebank! Still the people who believed they had been phthisical and were now whole adhered to the man who had cured them, and in 1898 Dr. Alabone published the thirty-fourth edition (one hundred and forty-sixth thousand) of his book, "The Cure of Consumption," dedicating it to a fellow of the Royal Academy of Medicine and naming (by permission) several score of the best doctors in England as believers in, if not users of, his methods.

Surely, so much smoke could not arise without some fire. Every great discovery has been bitterly opposed; so thousands of educated people regarded Alabone's treatment as specific and the man himself a martyr-benefactor.

Today, who knows anything of Alabone—or, for that matter, where is the physician who would dream of treating phthisis with lachesis? Indeed, how many would care to depend upon the universally lauded tuberculins, whether Koch's or any of the still-later varieties? The various sera also come—and go!—but the everyday doctor leaves them studiously alone and continues to ask, "What *is* the most rational method of treating phthisis pulmonalis?"

I am inclined to believe that if each man who asked that question could secure from a given treatment one-tenth the results Alabone and his followers obtained, he would unhesitatingly term it the *only* rational method.

The Mistake of Trying to Treat a Name

After all, it is not so difficult to treat the individual suffering from pulmonary tuberculosis, and, moreover, to treat him effectively. The moment we try to go further and aim to cure "phthisis"—the "named disease"—we are stumbling around in the slough of despond which, unhappily, has engulfed the majority of our great clinicians.

Alabone (and some before and after him) knew better than that: he dealt with the abnormal conditions present in the individual before him. He may not have "cured consumption" with lachesis; but he rectified every bodily wrong he could discover with the best remedies at his command. Proceeding along rational lines, he secured positive results.

The modern practician, infinitely better equipped in every way, should, by adopting similar methods, win even greater triumphs. He must, first of all, study, to the extent of his ability, the current literature on tuberculosis. Much of what he reads he should hasten to forget, but now and again he will discover a fundamental truth or receive a ray of light which will help him wonderfully.

Thus, for instance, the diligent student will learn that Wright gets results from the administration of very minute doses of tuberculin R, which are regulated by their effect upon the opsonic index, that is, upon the phagocyting power of the patient's blood. He will feel inclined, thereafter, to raise the opsonic index of his own patients. He will learn that most tuberculous patients die either from profound sepsis or a desperate anemia. If, therefore, he can limit the production of toxins, improve the condition

of his patients' blood and insure its oxygenation, he *ought* to reduce the local mortality somewhat.

By degrees the intelligent doctor will find himself watching his people carefully for early signs of tuberculous taint. He himself will know—and will teach others—that the time to "cure consumption" is when it begins. He will, moreover, have an elastic treatment, and often may prescribe for A entirely different drugs than for B, even though both suffer from pulmonary tuberculosis. Now and again he will send a patient away to Colorado, Florida or the Bermudas; not, however, because he has phthisis, but because the conditions present in the individual at the time demand such a change of environment. Still, nine times out of ten he will teach his patients how to live—and get well—at home.

It is unnecessary for me to touch upon this phase of the subject here. Other and abler men are contributing papers outlining in detail the correct daily routine for the consumptive. These gentlemen will, probably, urge the necessity of elimination—intestinal, renal and dermic. They will point out the fact that a certain amount of bodily activity is necessary to insure reconstruction. The proper articles of diet; the proportion of proteids, carbohydrates, etc.; the correct apportioning of solids and fluids for an individual of given weight; all these and kindred important facts will be discussed by others. It remains for me to call attention to a certain rather limited list of remedial procedures each of which alone, and all of them in combination, have proven of extraordinary value in the average case of phthisis pulmonalis.

The Favorable Soil and the Invasion

The ordinary tuberculous patient suffers, first of all, from *autotoxemia;* it is safe to say that a certain lack of resistance (the "favorable soil") must exist before the tubercle bacilli can gain lodgment and affect the system inimically. Once infected, the individual's system becomes charged with specific toxins; not infrequently we have to deal with a "mixed infection," tubercle bacilli, streptococci, staphylococci, diplococci pneumoniæ, and various other microorganisms comprising the invading host. Fever and all the multitude of symptoms we are conversant with make their appearance. Assimilation is poor; the various organs suffer; metabolism is deranged; weak spots make themselves obnoxiously evident. The patient is in a bad way; and unless treated rationally is apt to grow rapidly worse.

To place such a patient upon any kind of "routine treatment for phthisis," simply because tubercle bacilli are discovered in his sputum or the stethoscope reveals a consolidated area in the apex, is poor therapeutics, indeed.

The Rational Medicinal Procedure

First of all, empty the digestive tract of gross debris and inhibit intestinal fermentation. Open the pores of the skin and increase the output of waste. Cleanse the buccal and nasal cavities thoroughly; increase oxygenation of the blood-stream by deep inhalations of air containing antiseptic vapors; iodine destroys the pneumococcus; formalin inhibits bacterial development. Stimulate hepatic and renal activity. Produce a hyperleukocytosis. Supply the body-cells with the material necessary for repair. Meet all other disorders present in an intelligent way. These attended to, *the desired result is bound to follow!*

"If we could do all that," I hear some doctor remark, "we should be magicians, not medicos. As a theory it sounds most beautiful, but in practice——?" Yet one single practical test will convince any competent physician that all this, and infinitely more, can be done any day and with almost any case. To facilitate procedures, I will attempt to outline what may be termed a line of basal medication.

A Basic Scheme of Treatment

1. Empty the digestive tract. Blue mass and soda, gr. 1-2; podophyllin, gr. 1-6; iridin, gr. 1-6, every thirty minutes for three hours in the evening. The next morning give a copious saline laxative draught. Repeat the procedure every third night for

nine days. Every second night flush the colon with warm decinormal salt solution, having it retained as long as possible. Give a light laxative on evenings when the mercurial is not taken.

2. To keep the intestines free from inimical bacteria and inhibit fermentation: The sulphocarbolates of sodium or of calcium, or both, with pancreatin and a bile salt one hour after food.

3. To increase the output of urea, and of body waste generally Boldine and iridin or stillingin before meals are indicated.

4. To increase the appetite and improve assimilation: Add juglandin, strychnine arsenate, nux vomica (or quinine) to the "before-meal" dose.

5. To increase resistance (leukocytosis) and render the system generally inimical to bacteria: Nuclein with guaiacol, calcium, and iodine. I have for some time been experimenting with various combinations of these drugs and find this formula to produce definite results, in eight out of ten cases: Nuclein, gtt. 10; guaiacol carbonate, gr. 1; calx iodata, gr. 1-2. One or two such doses may be given every three or four hours. More massive doses of nuclein are given hypodermically or intravenously. (Ward's method.)

6. To assist in the elimination of the solids and to flush the kidneys: Arbutin, barosmin, asparagin, or other indicated diuretics are the remedies, aided by thin barley water. Lithium or ammonium benzoate may be called for if hyperacidity or alkalinity of the urine obtains.

7. To secure normal excretion of waste through the skin: Employ sponge-baths of magnesium-sulphate solution (carbolated). The usual proportions are: magnesium sulphate, oz. 1; carbolic acid, gtts. 20; water at 100° F., 2 quarts. Repeat the sponging each night, following with brisk friction with rough towel.

8. To maintain cleanliness of the upper respiratory orifices. Gargle thoroughly and douche the nares with an effective alkaline antiseptic; then spray the nares with camphor and menthol in petrolatum. Eucalyptol may be added with advantage, or oil of cinnamon.

9. To destroy surface bacteria and to stimulate the mucosa of the bronchi. For this order inhalations of formalin vapor and steam bearing volatilized oils (turpentine, cinnamon, eucalyptus).

The phthisical patient treated along lines as here outlined *must* improve, for the simple reason that the pathologic conditions present are intelligently—and effectively—met.

If the diseased individual be placed upon a correct diet, spends most of his time in the sun and open air (properly protected), exercises or rests as his condition may demand, and thinks hopeful thoughts, he is doing about all he can do to get close to natural conditions.

The physician who can lead the victim of consumption thus far may safely be trusted to meet emergencies as they arise, and *he* at least will cease to inquire pathetically: "What is the most rational treatment for phthisis pulmonalis?"

THE greatest obstacle in the way of social and political progress is our lack of faith in the good intentions of our fellows.—Golden Rule Jones.

A New Method of Treatment for Tuberculosis

By the Intravenous Injection of Nuclein

By EDGAR P. WARD, M. D., St. Louis, Missouri
Professor of Embryology and Clinical Medicine, Hippocratean College of Medicine

ONE of the great problems in the treatment of tuberculosis is to determine the best method of administering the remedial agents that may be indicated in a given case, and to ascertain, for a certainty, that they reach the tissues for which they are intended. On account of the greater or less uncertainty as to the fate of remedies administered by the mouth (owing to the impairment of the gastrointestinal system, which is present in all cases of tuberculosis) and to conserve the digestive energy, so as to provide for the taking care of the foods required for the nourishment of the general system, the oral route should not be taxed too heavily. Remedial agents given by the mouth only tend to place unnecessary work upon the digestive organs, thus impairing their utility.

Of the other methods for the giving of medicaments we are usually left to choose between two only. The first is the hypodermic method, by means of which readily soluble and non-irritating remedies are quickly and easily administered. In cases where large doses are not required, and in the hands of the average man, this is satisfactory, for one may be almost positive that sooner or later the remedial agent will be taken up by the circulatory system and distributed to the tissues of the body.

The second method is to give drugs intravenously. This assures the greatest certainty as to results. There is never any doubt that the medicament gets into the blood, for the physician puts it there himself, and, being so placed, it is promptly distributed to the tissues of the body in the exact form in which it is to be used. If we give the same remedial agent by the mouth we never know what chemical changes may take place through the action of the various digestive secretions, changes that may neutralize or alter the character of the remedial agent to such an extent that it is impossible to get the results desired or expected.

We Must Stimulate Cell Activity

For several years I have taken the position that if we desire to remove or overcome a pathological condition, we must cease our futile attempts to neutralize the pathological condition by administering certain medicaments, and expect by this process of neutralization to "kill off" further pathological growth. We must rather apply or use such remedial agents as will stimulate the development and rapidly increase the number of the normal cells of the tissues of the body. If we have enough cells possessing full vitality, we need not worry about the pathological condition, for that will soon be gotten rid of if the condition be a remediable one. A pathological condition cannot exist in the presence of cells which are full of vital energy, for they are essentially antitoxic to the pathological process.

How then are we to reach these cells, and with what agents? What is more natural than to turn to the most important cells (when you consider their physiological function) in the body, i. e., the red blood-cells. These blood-cells carry to the various cells of the body that most essential of all elements, *oxygen;* and when they become incapable of function we die. What is more reasonable than that the body-cells will become diseased and die when deprived of this requisite amount of oxygen? Supply these cells with all the oxygen that they require and they will assume such a healthy growth that no pathological process or disease organism can exist in their presence; and this being accomplished the patient recovers.

Build your erythrocytes up to par, and you obtain wonderful results.

Now comes a most important question: "What remedy shall I use to accomplish this, and how?"

Personally, I have decided that question to my own satisfaction. I have been using a nuclein solution containing approximately six grains of sodium triticonucleinate to the ounce, standardized to one milligram of organic phosphorus to each cubic centimeter, in a normal-salt solution made up as follows:

Calcium chloride	0.25
Potassium chloride	0.10
Sodium chloride	9.00
Water 1000.00	

I have been using this as a vehicle for the nucleim solution, for the reason that it conforms to the normal specific gravity of the blood.

Theory of Action

It has been heretofore considered that the giving of nuclein produces its good results chiefly by inducing leukocytosis. In my opinion the value of nuclein given intravenously depends not only upon this fact, but even more upon its up-building effects upon the erythrocytes and the hemoglobin. All other investigators have begun with the idea that the cure of tuberculosis depends, in great measure, on promoting leukocytosis. Now leukocytes, acting as phagocytes, can take care of the tubercle bacilli by surrounding and destroying them, just as they attempt to do with any other foreign body; but the tubercle bacilli of themselves are of minor importance. It is their effects which we must overcome.

Death occurs in tuberculosis from either (*a*) chronic sepsis from mixed infection, or (*b*) from profound anemia, which results from the action of toxins (or of the bacilli themselves, it may be) upon the erythrocytes, so diminishing the oxygen-carrying properties of the erythrocytes that the patient literally dies of oxygen-starvation. By combating the germs of sepsis, the nuclein-produced leukocytosis may reduce the danger from infection; but my experience impresses me more and more with the importance of the secondary anemia.

Now my records clearly show: first, that following the intravenous infusion of nuclein, the percentage of hemoglobin is markedly increased; second, that the number of red cells is decidedly increased; and third, that the specific gravity of the blood is almost uniformly brought up to, or near to, the normal. This is an important step in the treatment of tuberculosis, for it means that if patients can be given treatment before mixed infection occurs, the blood may easily be brought up to normal by this treatment, thus increasing tissue resistance.

My investigations thus far suggest the possibility of there being a nucleinic index of the blood, the exact rate for each individual varying in degree.

How the Nuclein Does Good

In the process of the development of the erythrocytes from the normoblasts of the red bone-marrow, the rapidity of the extrusion of the nuclei may be hastened or retarded by the amount of free nuclein in the blood (or if not nuclein then some unknown agent of like character) diminishing as the amount decreases and *vice versa*. If, then, the amount of nuclein be increased or the theoretical nucleinic index raised by the intravenous injection of nuclein, a problem of vast therapeutic importance is solved. All this, however, is purely theoretical. Yet as a practical result we do see exactly these results obtain, so whether or not the theory is a good one, we have the demonstration complete, in that its effects are just what is needed in the secondary anemias, even if not in the primary ones.

In the use of nuclein solution, intravenously, I begin with 20-drop doses, and as rapidly as circumstances will warrant increase the dose up to one dram every other day, all the time watching the effects upon the blood and regulating the dose and the frequency of it by the results obtained.

Results of the Nuclein Treatment

In eighty-six cases that I have records of, extending over a period of from six months to two and one-half years I have by this method of treatment obtained the following results:

Sixty cases have improved to such an extent that it is no longer possible to find tubercle bacilli in the sputum; the specific gravity of the blood has been raised to or near normal; and the number of red blood-cells has increased to or nearly to the normal number. This improvement had persisted from six months to nearly two years in some cases, and after all treatment has entirely ceased.

Fifteen are in practically the same state that they were after taking the treatment for a while; about all that can be said is that the nuclein has at least retarded the rapid progress of the disease. Eleven have died, the treatment having failed to even retard the progress of the malady. All of these cases are such as are seen in general practice; and many of them were beyond any hope when I first saw them.

The results of this treatment may be summed up as follows:

First. If there is not a net increase in the percentage of hemoglobin after two weeks' treatment, you cannot expect any permanent results.

Second. Even where there is no increase of hemoglobin, the treatment aids in keeping these patients on their feet.

Third. With a constant increase in the percentage of hemoglobin when the same has reached from 85 to 100 percent, with disappearance of the tubercle bacilli from the sputum and increase in the number of the erythrocytes to or near to the normal, this improvement persisting for one month after all treatment has ceased, the patient may be pronounced cured; but, of course, the physician must maintain a proper hygienic condition for a long time.

Meteorology in the Cure of Consumption

By ALBERT S. ASHMEAD, M. D., Canadensis, Pennsylvania
Director, Pocono Mountain Home

THE most favorable location for outdoor life of consumptives, in my opinion, is the Pocono Mountains of Pennsylvania, which are located at a more considerable distance from the sea coast than are the Adirondacks or Catskills. I am convinced that if we will select a place not too far back in the woods and within reach of milk, eggs, meat and poultry, we may have a reasonable expectation of securing good results in early cases of incipient tuberculosis in this region.

Hints As to Tent, Diet, and General Regimen

First, as to outfit, the best and most practical advice to give a patient would be to purchase a tent. A wall-tent is best, either round or square, it does not matter which, only so that it is readily ventilated. My belief is that any place where there is no malaria or any prevailing disease can be used advantageously in the cure of consumptives, provided the patient lives day and night out of doors, observes good habits, consumes plenty of milk, eggs and beefsteak, and does not exercise when his temperature is above normal or when there is much disturbance of pulse or respiration.

We have learned a lot by this time about such matters and I myself learned a great deal, though my place in Pike County five years ago was merely a camp in the woods. A good, judicious caretaker is of inestimable help; but it must be one who has no dread of fresh air and especially of night air. The wall-tent is best provided with a fly; and a good floor should be supplied, not of rough boards but with regular rabbeted joinings. Good folding cots can be had for about $3.00, and they are very important; only bear in mind that the sleeper needs a lot of clothing *under* as well as over him.

Chest exercise is valuable, but sometimes dangerous, so must be most cautiously used. The possibility of collapse of the lung from an opening into the pleural cavity is not to be lost sight of.

All consumptive camps as well as sanatoria should be accommodated with weather-bureau facilities. There is no doubt whatever that the outdoor method of treatment, in which such factors as sunlight and shadow, pure atmosphere, moderate exercise, rational feeding, and out-of-door pleasure are the principal ingredients, is the best method in the world for the cure of incipient consumption.

I do not think that altitude has much to do with the cure of the disease, excepting that up a mountain there are to be found the important meteorological agents more uniformly present, day and night, than at sea level. Yet, for instance, my friend, Dr. Kaurin, whose establishment in Norway is right on the north coast, at sea level, is obtaining as good a percentage of cures as those of others on higher altitudes. In Mexico, 400 miles south of the City of Mexico, there is a city of 30,000 people, called Oaxaca. Here there is no consumption at all. It is the resort for numbers of outside victims of the disease who go there to be cured. Oaxaca is situated at an altitude of 8000 feet. It is a prosperous mining city, where they never had a consumptive except when cases have been brought in from the outside.

There must be some precise conditions of atmosphere and sunlight or shadow which are more favorable to the destruction of the tubercle bacillus than are other measures, even in our best field of curatives. What are these? I myself have made comparison of weather-bureau observations with clinical observations on comsumptive patients. The weather-bureau observations were kindly put at my disposal by the observer at the United States Weather Status at Pocono Lake.

Importance of Sunlight Doubted

While I have not had experience enough to draw accurate deductions, I am strongly inclined to believe that sunlight has not much to do with the establishment of a cure. Indeed, the very opposite seems to be a fact, for on cloudy days my patients were all much better than on sunny ones.

At Oaxaca, in the Mexican mountains, clouds frequently obscure the direct sunshine. Then, too, on the highest Andes, among the ancient races of the Aymarans and Incans, pulmonary tuberculosis was not a factor as much as was skin tuberculosis, or some other diesases due to congeners of the tubercle bacillus. The rarified air of those maximum altitudes increased chest development enormously, up to an expansion of as much as six and six and one-half inches. Eskimos do not contract tuberculosis if they remain in their own lands, nor do inhabitants of the north of Norway.

Then, how can sunshine be called a factor, except as it permits us *house-dwellers* to go out more in the fresh air? In the museum of Edinburg University there is a striking object lesson for our celebrated socalled lung specialists. Side by side there can be seen the lungs of an Eskimo, of a Londoner, and a coal miner. The Eskimo's lungs are pure white, the Londoner's lungs are dirty brown, and the coal miner's lungs are jet-black. Neither is tuberculous, to be sure, yet the Eskimo is shown to have kept his lungs *clean*, not because he knew more about *breathing* than the Londoner or the coal miner, but because he lived in a land of snowfields and spent his time in the open, germless and dustless air.

The Purity of the Air Breathed is the Thing

Our sanitariums of large cities and towns should measure in some exact fashion the composition of the air breathed; its purity is as necessary to the health of the inhabitants, as is that of the water supplied. Not one board of health cares about the air supply of communities. One thousand cubic inches might contain as many germs as could be contained in water, yet no cognizance is taken of it, unless some contagious disease has been in a house.

The air blowing into Dr. Kaurin's tuberculosis sanitarium at Molde, Norway, comes bracingly down the Baltic Sea. It is absolutely germless and dustless, hence, perhaps, its curative power.

The materials useful in a consumption camp are as follows: Standard and aneroid

barometers to measure the pressure of the air, and the character and amount of barometric changes going on in the camp from day to day.

The mercurial barometer, perhaps, would give the atmospheric pressure with that degree of precision required in simultaneous meteorologic observations. A barograph could give a continuous record of the barometric oscillations, hour by hour, upon a sheet of moving paper or by photographic processes upon sensitized plates. The barograph-clock should be in every consumptive camp.

An anemometer for indicating, measuring and automatically recording wind movement and direction is readily obtainable, and is very useful for finding out exactly which wind is best, in a given locality, for the cure of consumption. It is necessary to learn the velocity or force of the wind, not merely its direction. The standard anemometer with electrical registration is the best for our purpose, namely, the pressure of the wind as well as its velocity may be studied, also relation to the health of the patients of wind velocity and the pressure. A windvane, or anemoscope, also should be on the grounds for quickly showing the direction of the wind.

Gordon cells connected in series will operate single register instruments for wind velocity; or two magnet registers for wind velocity and sunshine, or wind velocity, sunshine and rainfall, on the same battery, with three cells instead of two. Four cells will operate a quadruple register: wind velocity, wind direction, sunshine, rainfall. Six cells will weigh and gauge rain and snowfall. Eight cells will record a telethermograph temperature at a distance.

For registration of sunshine a sunshine-recorder is necessary. There are three such: first, the Campbell-Stokes burning recorder, which consists of a ground and polished crystal sphere that acts as a lens or burning glass and scorches a trace, showing the *duration* of bright sunshine upon a strip of cardboard; then the Jordan, or photographic, recorder used by the Weather Bureau; and, third, the electrical thermometric recorder, also used by the Weather Bureau.

These instruments, however, will not measure the brightness of sunshine, but only its duration and heat. These instruments will register a certain brightness of sunshine, but will not change from still brighter, or even the brightest sunshine, and the record remains blank for all degrees of intensity less than that which starts the record. Better and more complete methods of registration are now being devised; but as yet we could not exactly measure the sunshine required for the cure of consumption. Even these instruments will not exactly measure the time when the sun is covered with floating clouds or the exact instant when the sun disappears behind the cloud.

Value of the Solar Constant

The Weather Bureau has recently undertaken a series of special studies as to the value of the solar constant and its variations, by tests and intercomparisons of the Angström electric compensation pyrheliometer. The constant of this instrument is very carefully given by Knut Angström: the electrical resistance at 20° C. coefficiency of variation of resistance with the temperature, and absorbing power of the band, according to the width of surface. The intensity of radiation is accurately determined, and the intensity of current in amperes. From the best data now available it seems that the solar constant is about 3.1 gram-calories per square centimeter per minute. Here, we see, is a large field for determining the exact conditions of sunlight or shadow that has virtue in the cure of consumption. Psychrometric studies include also vapor pressure, relative humidity, and temperature of the dew-point, and these are effects of solar radiation and withdrawal of heat. Vapor pressure over ice is vastly different from vapor pressure at high temperatures. Rainfall and snowfall should be measured, as atmospheric pressures are varied by both of these. Atmospheric pressure surely is an element in the open-air cure of consumption.

Comparative observations made by myself on the Pocono Mountains of Pennsyl-

vania showed, for July, that the lowest monthly mean temperature of the whole state was, at Pocono, 65.2° F. (Highest 87°, lowest 43.1°.) The total precipitation was 3.22 inches. (Greatest in 24 hours, 1.40 in.) There were seven days with 0.01 inch or more. Number of clear days, 20; number of partly cloudy days, 0; number of full cloudy days, 11. The prevailing wind was west, and it was of course dry.

During August the lowest monthly mean temperature of the whole state was equal to that at Pocono, viz., 62.6° F. The lowest temperature of the whole state was, also as at Pocono, on the 27th, 34° F. (Highest 84°, lowest 34°.) The total precipitation was 3.58 inches. (Greatest in 24 hours, 1.64 in.) There were eight days with 0.01 inch or more precipitation. Clear days were 20; partly cloudy days 4; cloudy days 7. The prevailing wind was west, and of course dry.

During September the lowest monthly mean temperature of the whole state was the same as at Pocono, viz., 57.4° F. (Highest 80°, lowest 24°.) The total precipitation was 4.79 inches. (Greatest in twenty-four hours, 1.80 in.) On seven days the precipitation was 0.01 or more inches. Clear days 17, partly cloudy 3, cloudy 9. Prevailing wind west, dry.

During October the lowest monthly mean temperature of the whole state was as at Pocono, 44.4° F. (Highest 73°, lowest 15°.) The total precipitation, 5 inches. Clear days 17; partly cloudy 1; full cloudy 13; prevailing wind west, dry.

What Makes Pocono so Healthful?

The climate, as may readily be seen, is an exceptionally dry one. The temperature ranges, from June 30 to October 20, from 34° to 65° F., the air therefore is quite cool. But what it is that makes the air superbly curative for consumption has not yet been ascertained. Pure, germless air is the same here as everywhere, in midocean, for example, or at the north pole; but the radiant energy of something from somewhere and curative for lung trouble is certainly most intense here. What is it?

In a little modest camp with Swiss chalets, designs of which were kindly furnished me by the Swiss Minister at Washington, I obtained 81 percent of recoveries. The roofs of these shacks were especially adapted for protection from the drift of snows in winter time.

I have recently taken up this work again, and shall be happy to report further experiences in detail later on. My whole endeavor will be to study out what it is in the open-air treatment of consumption that produces the climate cure, when accompanied by strong proteid feeding with milk, eggs, and the administration of nuclein solution, with triple phosphates or arsenates of quinine, iron and strychnine.

In my treatment of leprosy I have used the nucleins for a long time, but for the purpose of producing abscesses on the bodies of lepers for my opsonic index work, on which I have prepared a discourse for the Bergen Leper Conference, on the invitation of Dr. H. P. Lie, the secretary general, which, owing to ill-health, I could not deliver, I always used yeast-culture cells, from which I made myself with sugar-ferments, each culture field being grown from a single bud.

For tuberculosis even this is not necessary; the manufactured nucleins will work independently of the vaccine principle and the dead bacilli. This air of the mountain itself acts as a phagocytosing body. There is no need to train the corpuscles in tuberculosis. In leprosy it is necessary.

Tuberculosis Treated with Crotalin

The Detailed Report of a Case Treated with this Remedy

By JAMES M. TISCHE, M. D., Wood Lake, Nebraska

I WISH to give you a report of one case covering twenty days of treatment with crotalin in which the failure is in no way due to crotalin but to the lack of a method as to how and when to give it. I would continue to use the remedy, were it not for the fact that the case is a stubborn one, and that it has long been neglected both hygienically as well as medicinally and now the common cry is, "For heaven's sake, do something."

A Resume of the Action of Crotalin

The following points are thoroughly impressed upon my mind:

1. Crotalin treatment improved the cough to a great extent.
2. Crotalin accelerated the pulse, temperature and breathing.
3. Crotalin did not have any effect on the night sweats.
4. Crotalin seemed to inhibit peristalsis more, the longer I used it.
5. Crotalin seemed to make the pulse small and wiry.
6. Crotalin at first took twenty-four hours to produce an effect, later only ten to twelve hours.
7. Crotalin internally, with hypodermic applications in addition, caused sickness, or nausea and vomiting.
8. Crotalin not only increased the evening temperature but kept the temperature high all day, while the morning temperature was noticeably lower.
9. I consider crotalin to have a cumulative action, as one-fourth the doses in the course of two weeks produced like and even more severe reactions than had occurred at first.
10. The apparent gain in weight I attribute to the confidence the patient had in the treatment.

Now thsee two facts I freely admit too: I used too much of it at the beginning, as my idea of its action from what I had been able to gather from current literature was, that it was a fever reducer, but instead it acted as a fever producer; second, I did not use it long enough or could not get the consent of the patient and his friends to allow me to use same in "*dose enough.*"

My idea is to use it in doses just large enough to obtain as slight a reaction as possible. In chronic coughs I would assign to it first place, with the above precaution.

In conjunction with crotalin I followed the general treatment as outlined by Dr. Waugh, in his scholarly article in CLINICAL MEDICINE for January, 1909. The patient has been sleeping in a window tent during the entire course of this treatment.

History of Patient

Mr. W. B., age 20, rancher, 5 feet 10 inches tall. Blonde. Mother's mother and sister died of consumption; patient's brother died of the same disease two years ago. Patient does not smoke, chew, or drink intoxicants. Has never spit up blood, but dried clots of blood have come from his nose mornings, although not frequently. Morning cough has been distressing and he then expectorates a tenacious lumpy mucus; in day time a slimy, frothy composition, which is now and then a little blood-streaked. Both apices and the right mammary region give blowing râles; in the axillary spaces there is pleural friction; breathing elsewhere over the lung surfaces is very obscure.

I first saw the patient in January, 1909, at which time he had a fever. His weight was 123½ pounds.

Daily Record

Dec. 30, 1909.—Temperature 99.6° F., pulse 106. Patient looking better than he has been doing. Weight 123½ pounds,

appetite very poor and he frequently vomits. At 3:52 p. m. gave 1-200 grain crotalin in back of left upper arm. At 4 p. m. he complained of slight aching. At 4 p. m. a lump the size of an egg appeared at point of injection and arm ached almost to the wrist joint. He had previously coughed incessantly; has not coughed so hard since he first complained of pain. At 4:52 p. m. temperature 100° F. At 8:52 p. m. temperature 100.8° F., pulse 97. Numbness and swelling of arm all gone, but seat of injection very sore and tender to touch, extending well up under the arm. The pulse now is more full and more wiry. Cough is absent, and patient feels livelier than he did last night.

Dec. 31, 1909, 10:22 a. m.—Temperature 99.6° F. Morning cough not so severe as usual; cough is looser and there is more expectoration. Appetite better than for two weeks back. Ate a very hearty breakfast. Pulse 95, full and strong, but weaker than the night before. Had slept soundly all night; did not awaken until 7:30 a. m. In excellent spirits. Swelling at the seat of injection all gone, tender only over immediate point of injection, stiffness all gone.

At 10:43 a. m. pulse 95, temperature 99.4° F., and there being little reaction left I gave a second injection of 1-200 grain crotalin in the other arm. Pain slight immediately after injection. At 11:02 pulse 86, more wiry. Patient has not coughed since injection. Temperature 100.6° F. Patient remarked that "This arm is not getting sore as fast as the other one was, the pain being located only over the puncture." Seat of injection for an inch in diameter red but no swelling.

At 11:43 a. m., pulse 90, losing its wiry edge; no cough; soreness spreading on the back of arm very slowly. At 11:43 a. m., pulse 90, same as before. Temperature 100.6° F. Patient had coughed several times. Breathing at night is easier, as the patient does not awaken feeling as if he were smothered. Respiration 16, free and easy. Stepping from a warm room into the cold had before provoked violent coughing and shortness of breath; this has not been so this morning. Arm is sore to the elbow and almost to the shoulder, although there is no swelling of the arm. The out-of-doors temperature today is 100° F.

At 12:03 p. m., pulse 88, losing its wiry feel. Temperature 101° E., patient has coughed a little more frequently and the cough is looser. At 12:23 p. m., temperature 100.4° F. Respiration 18. Pulse 88. Arm about the same; sorest over point of injection; no swelling, numbness or stiffness. Patient coughs about once per minute, cough is dry and high pitched, with a hoarse sound. At 12:30 patient felt a little chilly, but he has felt so for months, at about this time of the day.

January 1, 1910.—Aching all over lower half of body from hips down, chilly feeling at noon the same as ever. Appetite very good, only coughed three or four times all morning. Since dinner has coughed hard. Left arm swollen quite badly and red in the morning; at 2 p. m. it is red and sore, and hot to the touch. Respiration 19, full and easy, temperature 102° F.; pulse 114. Added triple arsenates with nuclein to the treatment.

January 2, 1910, 3:15 p. m.—Pulse 104, quick and soft. Temperature 102° F. Respiration 21, full and free, no aching or pain since last record. Slept well all night, sweated very little; appetite has been improving since the first injection. Chilly feeling was felt more from 11 a. m. to about 1 p. m. At latter hour patient began to feel better again. Right arm is still quite tender, left arm where first injection was made is about free from pain. Cough easy yesterday p. m., more troublesome this morning, cough not as hard as it has been the past two weeks before the first injection. Patient is in good spirits; feels better today than at any time. Color good, cheeks pink for the first time since I have known him, i. e., in one year. Finger-nails pink, skin apparently normal to the touch, and pink. Bowels and urine normal, before and since injections began; possibly more free since the injections began. Patient stated that he was hungry before meals for the first time in months.

At 3:35 I gave an injection of 1-100 grain of crotalin three fingers' width below injection No. 1. The arm was discolored a faint yellow green from injection, for a space one inch in diameter. The fits of coughing on going out of doors have been milder since injections than before. At 4:05 p. m., respiration 20, temperature 101.6° F., pulse 100. Arm is tender as far as the elbow, the muscle above the last injection is quite sore, but there is no numbness or stiffness. At 4:35 p. m.: Respiration 19, pulse 98, temperature 102° F. Left elbow is stiff; upper arm very tender and hot. Patient seems flushed; elbow and arm much more tender and sore than after former injections. At 5:35 p. m.: Respiration 19. Pulse 102, small and wiry, very quick. Temperature 101.6° F. Arm is stiff and painful. Patient cannot bend the elbow. Cough for the same time of observation very much less.

Improvement in general appearance since first injection commented upon by all observers. The patient is looking better, feeling better, and has a better color; arm hurts more than from the other two injections together. Eyes appear well, lips pink and normal, but ears are still waxy in appearance. Since first injection the former continual tickling in the throat is fast disappearing and a soreness seems to have taken its place. Expectoration is more profuse now in the morning. Daily expectoration about the same, which is very scanty. Morning cough is more loose, but not so severe. chest expansion 32 to 35½ against 32½ to 35 last October. Expansion does not provoke coughing as before. The excessive thirst has left the patient.

At 8:45 p. m.: Respiration 19. Pulse 100, full and strong. Temperature 101° F. Cough since last record very slight. Arm aches at the elbow, shoulder is stiff and there is pain in the axilla. Pain in lower arm only when hand is held on the knee and kept in one position for some little time. Finger joints seem a little more stiff than those of the other hand. Color of skin is pink and the ears are a trifle more pink than usual. Ate a very hearty supper. Arm between elbow and shoulder very sore and tender, clothes feel as if they were stuck to it, but there is no swelling. Voice has become husky in the last hour.

[EDITORIAL NOTE.—Following this, Dr. Tische gives a further record of the patient's symptoms, equally careful and complete, covering the period from January 3 to January 22. There were alternating periods of improvement and loss. Thus, on January 3 there was a purplish appearance, and the finger-nails were dark, color improving later in day, with rise of temperature.

Temperature varied widely during this period, ranging from slightly above 96 (subnormal) to 104° F. Pulse ranged around the 100-mark most of the time, generally somewhat above this, and usually small and wiry, occasionally weak and dicrotic. Respirations ranged from 17 to 26. There were occasional chilly spells and some night sweats. The injections caused considerable pain and were always followed by swelling and tenderness of varying degrees of intensity. Cough generally improved; fewer paroxysms on exertion and less disturbance of sleep. On January 7 the patient said: "I have felt better today, straight through, than any day since I have been in town." January 9 he "took cold" and cough became more severe with soreness under the sternum. This condition ameliorated within the next few days. January 2 he weighed 125 pounds; January 10 weight was 128½; January 13, 130½; January 18, 127½, and January 20, 128¾ pounds.

Up to this time, while the variation in the condition of the patient does not seem to have been great, there was apparently real improvement. On January 10 Dr. Tische decided that the doses of crotalin were too large and thereafter gave 1-400 grain. The arm was more swollen after this injection, January 12, but was not painful. During these injections a troublesome rash developed on the arms. January 15 pulse was 87, and the best taken during the illness. Crotalin was tried internally, late in the treatment, but caused nausea. From January 20, Dr. Tische reports as follows.]

Jan. 21, 1910.—Slept well, perspired freely, after which sleep was less good. Chilly spell from 11:30 a. m. to 1 p. m. Cough light and loose. Throat quite sore. Fingernails turned blue. Appearance generally only fair, appetite poor. Respiration 17. Pulse 95, good volume and soft. Temperature 101.2° F. Arm does not bother today.

Jan 22, 1901.—Slept poorly, felt bad generally. Chilled all morning. Temperature 1 p. m., 104.2° F. Cough was very light.

Since preparing the above, my patient has grown worse, after a decided change for the better under mercury succinimide, treatment up to February 21, 1910. A rapid rise of temperature February 21, 1910: 12 m. 97.3° F., 1 p. m. 101.2° F. and at 3 p. m. 104.1° F. His weight today is 123, the lightest since treatment began. The internal treatment I was compelled to cut out entirely as his stomach would not retain it. Bowels are hard to move.

Diet: very raw steak, raw eggs, fresh milk, fruits and new vegetables. With all of this temperature the patient is up and about and very cheerful.

The Value of Nitroglycerin in the Prevention of Hemoptysis*

A Study of the Etiology of the Condition, with Therapeutic Deductions

By FREDERICK S. MINNS, M. B., Toronto, Canada
Late Resident Physician to the Toronto Free Hospital and King Edward Sanatorium, Weston, Ontario

THERE is no symptom nor complication in pulmonary tuberculosis which causes so much alarm to the patient and anxiety to the attending physician as hemoptysis. No matter how scanty the hemorrhage may be, it is not to be regarded lightly. In the vast majority of cases a recurrence is to be expected. And if it be at all profuse the possibility of death from suffocation, from subsequent exhaustion, or from bronchopneumonia is never to be disregarded.

The frequency of this complication may be said to be about 60 percent of all cases. Varying estimates are given by different authorities, ranging from 25 to 80 percent. Of one hundred consecutive cases admitted to the Toronto Free Hospital previous to May 1, 1908, the records show a percentage of 47.

A common observation in connection with the occurrence of hemoptysis in institutions has been that they do not often occur as isolated cases.

*Condensed from an article appearing in *The Canadian Practitioner and Review.*

Etiologic Factors in Hemoptysis

The general rule is that they appear, as it were, in epidemics. This has suggested that some common factor is a causative agent, and different authorities and investigators have suggested as this common factor (1) the presence of mixed infection, or (2) atmospheric changes.

In regard to mixed infection, all that can be said as the result of the investigations that have been made is that in a certain percentage of cases of hemoptysis mixed infection has been found. In no case, however, has it as yet been proven to be a causative agent, nor have the advocates of this theory given any explanation which adequately covers those cases in which mixed infection is present over long periods without hemoptysis. Nor does any such theory explain why as high a percentage as fifty of all cases of pulmonary tuberculosis never have hemoptysis.

In regard to atmospheric changes, it has been the observation of the writer that hemoptyses have usually occurred in groups of from three to ten. As a matter of fact, out

of one hundred consecutive hemoptyses only five occurred as isolated cases. They have generally occurred when the barometric pressure was extremely low or high, or following rapid changes from one extreme to the other; when the degree of humidity was great; when the amount of precipitation was large; and when the wind was of high velocity, and frequently from an easterly direction.

For example, in May, 1908, hemoptysis occurred at the Toronto Free Hospital for Consumptives on the seventh (8 cases), the fifteenth (1 case), the sixteenth (2 cases), the thirtieth (1 case), and the thirty-first (1 case)

Meteorologic Factors

Each of the foregoing cases corresponds with significant atmospheric conditions. For on looking over the records of the Meteorological Station, Toronto, which were very kindly placed at our disposal by Mr. R. F. Stupart, Director, we find: On the seventh the degree of humidity great, the amount of precipitation large, the barometric pressure falling, and an east wind of the highest velocity for the month.

On the fifteenth and sixteenth we find the degree of humidity great, and an east wind of high velocity.

On the thirtieth and thirty-first we find the degree of humidity great, the largest amount of precipitation for the month, and a variable wind shifting from east to west.

In January, 1909, hemoptysis occurred on the seventh (1 case), the seventeenth (7 cases), the eighteenth (2 cases), the nineteenth (2 cases), the twentieth (1 case), the twenty-second (1 case), the twenty-sixth (1 case), the twenty-seventh (1 case), the twenty-eighth (2 cases), the twenty-ninth (2 cases), the thirty-first (1 case).

On the seventh we find the highest barometric pressure for the month immediately following a low pressure—a rise of 0.85 in the minimum pressure, and a great degree of humidity.

On the seventeenth we find a rapid fall of barometric pressure, the second-largest amount of precipitation for the month, preceded on the sixteenth by a northeast wind of very high velocity.

On the eighteenth and nineteenth we find a rapid change from high to low barometric pressure, and a great degree of humidity.

On the twenty-second the hemoptysis was due to overexertion.

From the twenty-sixth to the thirty-first we find rapid changes of barometric pressure. We find the lowest pressure and the highest velocity of the wind for the month on the twenty-ninth. We also find a very high degree of humidity, and precipitation the largest for the month on the twenty-ninth, with north and east winds of fairly high velocity.

Unless these cases are to be considered as mere coincidences, they must be regarded as showing in this connection that great or rapid changes in atmospheric conditions are associated with the incidence of hemoptysis. And the explanation would seem to be that, while in health rapid changes have an appreciable but not serious effect because the body through the nervous system is able to accommodate itself to the changed conditions, in disease this power of accommodation is lacking and equilibrium is suddenly disturbed.

Blood-Pressure Plays an Important Part

Whatever may be the exciting cause of the hemorrhage, it seems reasonable to suppose that the blood-pressure in the pulmonary area plays an important part in its production. About blood-pressure in the lesser circulation, either in health or disease, very little is known. Janeway, however, says:

"In the lesser circulation, as is well known, much lower pressures obtain, since this is true for the right ventricle as compared with the left. The direct estimation of blood-pressure in the pulmonary artery is very difficult, without producing markedly abnormal conditions. The best experiments by Bentner, Lichtheim, Bradford and Dean, and Knoll have shown values, as compared with the aortic pressure, between 1:2.6 and 1:13.4. These were in the rabbit, dog and cat. In all probability it does not average more than one-fifth the height of mean aortic pressure."

Of one hundred patients studied by Naumann, in sixty-nine the blood-pressure was

over 130 mm. (G.). In thirteen the blood-pressure was 115 to 130 mm. (G.). In eighteen the blood-pressure was under 115 mm. (G.). Naumann considers these high, normal, and subnormal values.

It does not seem possible, however, to assign any limits of blood-pressure as being the normal condition found in pulmonary tuberculosis.

The following are the results of 50 cases taken at random from patients in residence at the Toronto Free Hospital for Consumptives: In six the blood-pressure was over 130 mm. (G.). In twenty-one the blood-pressure was 115 to 130 mm. (G.). In thirteen the blood-pressure was under 115 mm. (G.).

The following are like readings from (8) individuals apparently in good health: In one the blood-pressure was over 130 mm. (G.). In five the blood-pressure was 115 to 130 mm. (G.). In two the blood-pressure was under 115 mm. (G.).

These records show a wide range and demonstrate that the personal element is much stronger than any due to the disease. Whatever may be the normal pressure in the pulmonary area in any particular patient suffering from pulmonary tuberculosis, it is evident that if hemoptysis is to occur, a point must be reached at which the pressure is too great for some particular vessel to withstand. And when it is remembered that in pulmonary tuberculosis the vessel from which a hemorrhage takes place is probably one weakened by the progress of the disease-process, it is not necessary that the pressure in that particular area be even higher than normal. It is evident, also, that the strain on a particular vessel wall may be altered by a change in the pressure either within or without the vessel. And if hemoptysis is to be prevented it is necessary, since the pressure outside the vessel wall is not under control, to endeavor, if possible, to keep the pressure within the vessel considerably below the danger point.

Suggestions for the Prevention of Hemoptysis

Much has been written and many suggestions made in regard to the treatment, immediate and subsequent, in the case of hemoptysis, but very little, if anything, has been done along the line of its prevention. It will readily be seen that this is a subject of some value, significance and interest.

Many authorities claim that it is impossible to maintain permanently a reduction of pressure in the pulmonary area by means of any therapeutic agent. This, however, is a statement which cannot very well be proven, since no experimental observations of blood-pressure in the pulmonary area have been made without the production of conditions far removed from the normal. Clinical observations, however, go to show that increase of pressure in the systemic area produces an accompanying increase in the pulmonary area.

This is evidenced by the occurrence of isolated cases of hemoptysis due to physical exertion, emotional excitement, or mental disturbance, in all of which cases we find an increase in the systemic pressure. Conversely, it is reasonable to suppose that a reduction in the systemic pressure would be accompanied by a reduction in the pulmonary pressure, and that therefore hemorrhagic cases with a blood-pressure perilously near the danger point might be placed in a position of comparative safety if the maximum pressure in the pulmonary area could be lowered sufficiently to allow a working margin without the danger point being reached.

One of the most useful therapeutic agents capable of producing such a result seems to be nitroglycerin.

How Nitroglycerin Acts

The action of nitroglycerin is described as follows by Cushny:

"The flushing and dilatation of the arterioles of the head is found to be accompanied and followed by a profound fall in the blood-pressure. The heart is accelerated at the same time, and seems not to be responsible for the change. The cause, as has been repeatedly demonstrated, is the dilatation of the peripheral vessels, both arterioles and veins widening under the influence of the drug; the vessels of the abdominal organs

and the head are more affected than those of the extremities.

It is generally considered that nitroglycerin is extremely poisonous, and therefore it is given in exceedingly minute doses. With this precaution, however, it can be given over long periods without any apparent injurious effects. For example, 1-100 of a grain may be given four times a day for weeks, or 1-400 of a grain may be given for months.

The following routine treatment of hemoptysis, including nitroglycerin, has been found very efficacious:

At the time of hemoptysis: Morphine sulphate, gr. 1-4, hypodermically, only if the hemorrhage is profuse, or in case of extreme nervousness. Absolute rest, both of mind and body. No talking. Semirecumbent position. Chipped ice, salt, or snow. The following are also sometimes of value: Aconitine, gr. 1-200; atropine, gr. 1-50 to gr. 1-25; amyl nitrite, m. 5. Ligation of the extremities.

During subsequent forty-eight hours: Nitroglycerin, gr. 1-100, q. q. h., by mouth. Calcium chloride, gr. 20. q. q. h., for three days only; or the lactate. Purgative, calomel, grs. 2. Sod. bicarb. grs. 5. Saline. Absolute rest in semirecumbent position. Diet, cold milk, gelatin.

During remainder of first two weeks: Nitroglycerin, as before. Rest. Saline quotid., a. m., a. c. Diet, light.

After the first two weeks: Nitroglycerin, gr. 1-400, q. q. h. Laxative, if necessary.

A brief history of one of several cases which have been treated with using nitroglycerin as a preventive may be of interest.

Some Case-Reports

Case 1. Male, age 30, white, clerk, marked debility, cough troublesome in the evening, with about two ounces of expectoration, poor sleeper, appetite fair, bowels constipated. Temperature, 100.2° F., pulse 120, respirations 28. Weight 146—a loss of 14 pounds since August, 1907.

"Always had a cough." For past two years had enjoyed best health, to his recollection. Caught cold November, 1907. Had the grip for two weeks, followed by sciatica for six weeks. From the beginning of 1908 until admission in March he was under the care of his physician for recurring hemoptyses, having had 18 or more in all.

Treatment and progress. Admitted March 13, 1908. March 14, 1908: Nitroglycerin, gr. 1-100, q. q. h. Mist. mag. sulph., one ounce, t. i. d., a. c. March 15. Color in sputum. March 19: Color in sputum. March 23. Hemoptysis, quantity measurable in ounces. March 25: Hemoptysis, quantity measurable in ounces. March 30. Slight hemoptysis, quantity measurable in drams.

The same treatment was continued, except that on July 10 the dose of nitroglycerin was reduced to 1-400 grain. No more signs of blood appeared. Patient left institution in December. Has been at work since the beginning of January, 1909, and has continued the treatment. No more hemoptyses.

Of the eight cases which had hemoptysis on the 7th of May, 1908 there were four in residence on January 31, 1909.

One of these, who had a previous history of over twenty hemoptyses during the years 1902, 1906, 1907 and 1908, had continued taking 1-400 grain of nitroglycerin four times a day, and only on one occasion has had a trace of color.

Summary

1. While there may be other elements in the production of hemoptysis, it is evident that blood-pressure in the pulmonary area plays an important part.

2. Estimation of blood-pressure in the pulmonary area cannot ordinarily be made experimentally.

3. Clinical observation, however, goes to show that there is a relation between pulmonary pressure and systemic pressure.

4. Such preparations as nitroglycerin are capable of reducing blood-pressure in the vascular system, and by their use it would seem to be possible to keep the pressure in the pulmonary area in any particular case reasonably below the danger point.

5. The drug should be administered in small doses, and may be continued over long periods.

6. The results obtained here have been the result of the study of over six hundred cases of pulmonary tuberculosis in residence, and the treatment as carried out for nearly two years has given time to prove the efficiency of the same.

7. It would seem to be indicated that this drug should be administered in the morning some time before the hour of rising, and subsequently at, say, 7:30 a. m., 11:30 a. m., 4:30 p. m., and 7:30 p. m., in order to have the result produced before the blood-pressure is raised by the exertion incident to toilet, meals, etc.

8. When 1-100 grain of nitroglycerin will reduce the blood-pressure 15 mm. in less than ten minutes, the same dose, given four times a day for, say, two weeks, should be sufficient to maintain a lower pressure than the individual's normal.

9. While the administration of nitroglycerin has not proven to be an absolute preventive, still, in the large majority of cases, with a previous history of hemoptysis, or the occurrence of the same while in residence here, it has been clearly proven to be efficacious in reducing the frequency of the complication and in lessening the amount of blood lost when it does occur.

To Dr. W. J. Dobbie, physician-in-chief of the hospitals for advanced tuberculosis at Weston, the gratitude of the writer is extended for his courtesy and assistance, and in providing free access to the records and other data that have made this article possible.

The Trend of Modern Medicine

A Study of Therapeutic Evolution

By J. WILLIAM WATSON, A. M., M. D., South Braintree, Mass.

EVERY medical student at one time or another in his lectures on therapeutics is told that in the first few years of his practice he will use a great many drugs, but after a while he will sift them down to a few definite principles; and these he will use the rest of his life, making the number fewer and fewer as the years go on.

To illustrate: Some three years ago I was living in a town where there were two physicians of the same name, one young and lately started in practice, and the other with nearly a quarter of a century of experience behind him. I had been ill for several days with a diarrhea, when, on a Sunday morning, just after tasting of food, I was taken with cramps, vomiting and purging. I was hustled to bed in great agony, and my wife by mistake called in the young doctor, who told me to take a grain of calomel in divided doses, follow this with saline laxative, and then take a diarrhea compound. I felt that I had all the physicking that I needed, and I did not relish the idea. So my wife called in the older physician of the same name, and the one that I wanted. He gave directions to rest completely, and left a small tablet to be taken every three or four hours. Notice, only one drug was given, and all the rest was talk or advice. This surprised my wife, for she had seen me follow the first course so many times.

The patient made a good recovery and had plenty of food for thought.

Many Recover Without a Physician

I said "talk or advice." In a medical school not far from that in which I was educated one of the professors used to tell his students that "half of the people"—"yes," he said, "I will make it three-fourths of the people, when they become ill, never call in a physician; and yet they get well. The

other fourth call in a physician, and one-half of these get well, in spite of the physicians and their drugs. The very presence of the physician and the confidence he inspires does a vast amount in making a patient well, with the help of good Mother Nature."

I know of one old lady (the salt of the earth) with whom her physician at her request used to invoke the blessing and aid of the Great Physician. This did her more good than the medicine, and it is a thing I believe that every physician should be able to do upon request (only). It is valuable, as it acts decidedly upon the subconscious personality, which is the great healing power within ourselves and is almost wholly unknown to us.

In my early medical education my professor of physiology, while lecturing on digestion, said that more attention ought to be paid to food by physicians and less to drugs. And there he stopped, and so it is in most of our medical schools, the subject is just mentioned and that is all. We are left to do our own thinking. If we want to give our patient iron we are not told to feed them on such things as asparagus, pears, lettuce, peas, beans, and potatoes, which are all rich in iron in the most assimilable form and furnishing nourishment at the same time.

Growth of Drugless Healing

Apropos of this, the editorial on "The 'No-drug' advice of Woods Hutchinson" in the March number of CLINICAL MEDICINE is interesting. Not very long ago there appeared in several journals an article on "Drugless Healing vs. Medicine in the United States;" this was reprinted in full in CLINICAL MEDICINE, which we are glad to see takes note of the latest discoveries of vital importance to physicians. For years now this matter has been agitating the profession. For the last three years I have observed it carefully. And here is where the idea of evolution comes in—*in trying to find that (no matter what the source) which will do the patient the most good.*

I practised some three years with the galenicals, which were taught me in my medical preparation. Then followed a study of the alkaloids, which I still cling to, together with a closer study of the cause of disease. For the last three years I have looked into hygiene very carefully, especially of the digestive tract.

My attention was drawn to this by the oft-repeated suggestion of THE CLINIC "to clean out and keep clean," and make the intestines antiseptic. I wondered if there was not some other way than by taking so much physic to accomplish the same end. It did not seem to me that it was necessary to take so much physic. By correct methods of eating I decided that this could be accomplished, as that a great many chronic diseases could be helped and perhaps cured in the same manner.

I do not believe in absolutely no drugs, but in the use of fewer drugs. Not so much in "good advice," as in *actual help* both for the present and for the future. Every physician knows that certain hygienic methods have to be followed in order to get the best results from the medicine he gives. Why not go into the hygiene more, and study up, for example, the value of water, which often forms a component part of the medicines that we give?

Much is being written on the various creeds and pathies of the treatment of the sick, and many people are interested in them, simply because the regular physician fails to make good, while the pathies are often successful in these same cases. It is valuable, therefore, to see wherein their success lies.

The No-Breakfast Plan

The no-breakfast people are successful in a certain number of cases, because the supply of food is cut down. It is a well-known fact that the American people are great eaters, "guzzlers." No doubt many of the sudden deaths due to supposed heart disease are really cases of indigestion. If the amount of food is lessened, there will be less fermentation in the bowels. But the no-breakfast plan alone will not cure all disease, as its devotees claim. With less eating the food must be regulated to fit the case in hand. In this respect the layman

not able to regulate his diet, and here is where the studious physician should step in and recommend the proper food to suit the patient and his needs. Along this line might be included the fasting idea supposed by many to be the great cure for human ills. Stop feeding the disease entirely, and the patient with proper medication will get well. No doubt that there is a great deal of common sense in this idea, and we have frequent examples of fasting furnished for us in Holy Writ.

It is a well-known fact that we all have within us an inherent power, called immunity, that resists disease. The better the blood, the greater is the immunity. If the blood is not acting on decaying food it is purifying the body. It has been stated that the fasting person can not catch disease, because his blood has a higher resisting power. No doubt that there are times when it is not wise for us to force our patients to eat, for in so doing we abuse them by our supposed kindness.

We have often assured our fever patient that he can not catch cold when he has a fever, but it does not seem to occur to us that the blood while fighting to rid the body from the fever is in no condition to aid the stomach in the digestion of food, which when forced upon the patient, as we often do, to "keep the strength up," is apt to produce more fever. Behold, how long some of our typhoid-fever cases linger. Is it because we feed them by urging them to drink milk, which on a hot summer day will soon sour? It finds worse than dog-day weather when it reaches the nonsecreting stomach of a fever patient, having a temperature of 102° F. or more, and because of impaired digestion produces a continuance of the fever and the bad stools. Here is where the no-drug man in his fasting method gets ahead of the profession; but I think that we shall get away ahead of him by adding to the fasting very small doses of aconitine in four ounces of hot water, hourly repeated.

What the "Water-Cure" and Christian Science Accomplish

The water-cure people have some good ideas, and not all advice either. They give their patients help very quickly. I have seen patients vomiting, purging, in severe stomach and abdominal cramps, and pains relieved almost instantly by the judicious presentation of hot and cold (not ice) water. A great many people dislike any opiate, and so when the no-drug man comes along and relieves them in this way without any of the unpleasant after-effects of an opiate, they are ready to listen to what good advice he may give them in order to prevent future attacks of a similar nature.

I can not say much for or recommend Eddyism. It is called Christian science (a good name thereby spoiled), but it is not anything but Eddyism, a despotism, a jumble. I believe that nearly every up-to-date physician believes in Christ. A careful examination of His work shows that He was a man of science. He was a great exponent of drugless healing. His science was nothing else but *Christian*. We can not help but believe in His science, hence, therefore, we believe in Christ science. He anointed the blind man with clay (we use it to make antiphlogistine) mixed up with saliva (which by the way has been found to have great antiseptic properties, sufficient to kill the germs of diphtheria and cholera morbus), which indicates that he probably used some drugs. He conformed to the customs, and one of his closest followers was a man of our cult. The Eddyites do not use drugs, and their rule is to get rid of the physician so that God will have a better chance to get in His perfect work.

Not so with real Christ science, the science taught us by Jesus Christ, for it does not hesitate to use drugs nor does it hesitate to work with physicians. It works and acts on the subconscious mind in a mysterious way, and this is where mental science, faith-healing, and perhaps Emmanuel healing have their power. The basic principle is found in faith in God and prayer. Every true physician in hours of need turns, as did President Lincoln, unconsciously to these great weapons, and afterward he wonders how that very sick patient got well. At present we can send messages without wires and save life. Why cannot we save

life by thought transference and heal with the aid of the Deity? This may seem a little fanciful, but it is worthy of consideration as there is evidence extant proving some remarkable cases of healing, which our finite minds can not account for in any other way.

Other Drugless Methods

I have seen osteopathy limber up joints and calm the pains of rheumatism. I have seen the osteopath use drugs (and also at my recommendation), but he uses massage more. With a good manual and vibrator the regular physician could attain the same results. It has been my good fortune to soothe sciatica by these methods. The osteopath, on account of his knowledge of the framework and the physiology of the body is coming in demand by corporations to determine the severity and extent of injuries in case of accidents.

The naturopath, the physical-culturist, and the food-scientist are all students of hygiene. I have seen cases of severe constipation that have gone the rounds of physicians pleasantly cured by living a natural life, taking proper exercise, and eating the proper food, and not a single drug (unless perchance a placebo, with the odor of a drug about it only) was given. Rheumatism has been absolutely cured by these means, besides a great many other troubles, including that dread disease, appendicitis.

Now, there must be something to these methods or nearly one-fifth of the American population would not be adopting them. Woods Hutchinson is not the only one that has hinted, in by no means whispering tones, that in the years to come the physician will be "out of business." It will be his work to show people how to keep well, but it will take a less number to do this. The physician will probably be paid to keep people well, and, perhaps, as in China, when the patients are sick his pay will stop.

Is a Drugless Era at Hand?

Up and down the length and breadth of this country health papers and magazines are being circulated without number. Health foods galore are being advertised. The whole country is being circularized to show people methods that are conducive to health. People are waking up to the asserted fact that the doctors do not know much about health methods without drugs, in fact they antagonize them. The matter of national health is being taken up by the Government through the praiseworthy efforts of the Committee of One Hundred.

In all this very little is said about drugs. It would appear that a drugless era is about to follow the everlasting soaking for nearly a century with patent medicines. Great upheavals now and then take place, and the worst of it is that those who have tried the drugless healing like it extremely well, and I find it next to impossible to get them to take any kind of medicine when it is prescribed.

This, then, seems to be the evolution in medicine. What will be the outcome? This I feel is a hard question to answer. Many of the older physicians have already, as we have seen, partially answered for themselves by using fewer drugs. Some of the younger graduates, I note, are therapeutic nihilists, which I feel is due to a faulty training. As students we learn almost nothing about active principles. A few of these well used will meet many requirements. Perhaps, too, many useless things are taught in our medical schools. If more time was spent on hygiene (under which head come many of the drugless healers), personal and national, in all of its possible phases, we might be surprised to find how much good we might do without drugs; and yet it would be well always to carry them in our equipment. We should be getting a practical knowledge of "how to heal the sick." It might well pay us to examine these various cults, sift the wheat from the chaff, and include the best in our practice; so if a patient comes along and is a disciple of a certain sect of healing, we can wisely show him where the defects are and lead him intelligently on the right road to "Wellville." As long as you are not antagonistic, but are always open to the various cults to get all the good that you can out of them, these patients will come to you, and both you and the patient will be benefited.

For a year or more we have had in CLINICAL MEDICINE some very valuable instruction in materia medica and therapeutics. Now, if we could have some instruction in Hygiene, Foods, Hydrotherapy, Osteopathy, genuine Christ Science, and Physical Culture, we should be adding much valuable knowledge to that already attained on the physiologic properties and application of the alkaloids during the last twelve months, and be better equipped to "heal the sick."

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[This communication deals with matters of such vital interest to the profession that it will be treated editorially. Dr. Watson draws the lines well. The issue is squarely before us. The future of medicine depends on the way we treat the questions he so boldly raises.—ED.]

Diabetes Mellitus: A Personal Experience

Do Intestinal Parasites Sometimes Cause It?

By JOHN B. LEIBERG, Leaburg, Oregon

THE writer desires most earnestly to interest the staff of CLINICAL MEDICINE, and through them the medical profession in the United States, to the subject-matter of this article.

I will preface my statements by explaining that I am a layman, but interested in the medical profession more or less because my wife is a physician of the regular school, a graduate of the Northwestern University; also that I employ most of my time in microscopical work with high powers and do not make loose and unsubstantiable statements in matters relating thereto.

Belief in a Typical Case of Diabetes Mellitus

Late in the fall of 1908 I discovered sugar in my urine. How long the condition had existed before it became noticeable I have no means of telling, but probably not more than a month or two. My attention first was drawn to the condition owing to the frequent desire to micturate and the pale color of the urine. The condition rapidly developed all the symptoms of diabetes mellitus, i. e., thirst, emaciation, pale urine with specific gravity varying from 1030 to 1045, amount voided in twenty-four hours from 100 to 130 ounces, sugar from 10 to 15 percent, emaciation, headache, vertigo, and particularly noticeable dimness of vision.

Thinking that travel and change of climate and food might work a cure or at least an amelioration of the symptoms, I traveled to Japan, China and the Philippines in March, 1909. The only drug-treatment I had tried up to that time consisted in the use of various alkalis to counteract the acidity of the urine and the consequent irritation at the meatus, and of small doses of codeine in glycerin.

A few days before the sailing of the steamer on which I was to embark a change for the better was noticeable in my condition. In a week or so after sailing the symptoms began to disappear, and long before I landed in Japan I was entirely rid of the trouble. The cure was credited in part to the alkalis, in part to codeine, in part to change of climate and, to some extent, of food.

In the Philippines I remained four months, traveling through the wilds of Luzon, mostly on foot, camping out in rains and bad weather generally, with no recurrence of the diabetic symptoms. Nor did I suffer from any other form of sickness during this time. In August I left the Philippines for the United States *via* the Suez route, visiting various countries in Europe, and arrived in Washington, D. C., in November.

The Diabetic Symptoms Recur

Soon after reaching Washington I noticed a renewal of my diabetic symptoms. Tracing back, I fancied that they could be

located about one month earlier for their beginning. The symptoms were identically the same in character as they had been a year before. But this time it was discovered that alkalis and codeine had not the least power to change or ameliorate them. In February last I left Washington for my home here. My condition was constantly getting worse; there was great emaciation, and headache, vertigo and dimness of vision were so pronounced that I could scarcely walk without reeling from side to side.

On reaching home we began to look into the trouble in earnest. It was quite clear that unless a change for the better could be secured death would be the ultimate result. It was likewise clear that in ascribing the former cure to the alkalis and to codeine we had probably erred, considering that these remedies had no influence now over the disease, even in the slightest degree. We then began to trace back to the time of the former cure, endeavoring to ascertain if I had made use of any other drug than the alkalis and codeine at or about the time when the improvement had been noticed. And in doing this we solved the mystery.

The Worm Remedies Seem to Give Relief

In traveling about the country I always carry a small assortment of the alkaloidal preparations, among which the santonin and calomel combination is never lacking, since my microscopical work has taught me the prevalence of intestinal parasites of the roundworm type. In going to the Philippines—having been there once before and knowing the conditions—I provided myself, in addition to the santonin and calomel, with the 1-6-grain koussein granules and Barron's "worm-remover" combination, containing chelonin, gr. 1-6, santonin, gr. 1-10, and podophyllin, gr. 1-33. Now, in tracing back I recalled that a few days before embarking I had taken several doses of the "worm-remover" to expel any parasites of the roundworm type which might have found lodgment. The taking of a dose or two of some anthelmintic once a month or six weeks is a habit I have when traveling, but heretofore it had always been the santonin and calomel which had been taken. In this case I had changed to the "worm-remover" to observe the action of the podophyllin with which this preparation is compounded.

Having ascertained that improvement and cure had followed the exhibition of the anthelmintic, we began to consider if the diabetic symptoms might not have their origin in the presence of some sort of intestinal parasite. To ascertain this I first secured free evacuation with saline laxative. The feces were examined and found to contain millions of cysts varying from 0.01 to 0.2 microns in diameter, some of them clear, others filled with granular matter, but most of them containing daughter cysts filled with coccidia-like bodies 2 to 3 microns wide and about twice as long.

Protozoic Parasites Found in the Intestines

We now had recourse to the worm-remover combination. The dose was nine granules at night followed by two granules the next morning. The dose was repeated twice, with an interval between the first and second dose of two days. The feces were examined after the first dose had operated. They contained thousands of organisms, one-celled, flask-shaped, evidently some form of protozoa, from 0.5 to 1.5 cm. in length and from 2 to 2.5 mm. in width at the broad, or posterior, portion of the body, to 1 or 1.5 mm. at the anterior, or neck, end. With the expulsion of the parasites the diabetic symptoms disappeared promptly. In a week the vertigo, dimness of vision and reeling walk had entirely vanished, and I am now in perfect health.

The parasites are *protozoa*, not nematodes. Apparently they belong to the gregarine type, to the group composed of one-celled organisms. I have no specimens or would send them to you.

I feel perfectly sure that we are not mistaken in ascribing the diabetic symptoms to the presence of these parasites. If one case has occurred in this country the probability is that there are many more due to precisely the same cause. I do not mean to say that all cases of diabetes are of para-

sitic origin, but where the onset is sudden and progress rapid one may suspect infection of the sort here noted as the cause.

Can Intestinal Parasites Cause Diabetes?

Will you not interest yourself in this matter and assist in shedding more light on it? If we have a disease in this country exactly simulating diabetes, of parasitical origin and curable by proper anthelmintics, it is worth while to find out all about it. There must be many other cases similar to mine which have been diagnosed as diabetes and treated as such without any improvement following. You are in a position to call wide attention to the matter.

Positive diagnosis is easy. Give a saline cathartic to obtain watery evacuations, examine the feces for cysts containing coccidia. A 16-mm. objective with an ×6 or ×8 eyepiece will show very clearly the large cysts. To recognize the coccidia-like bodies within them requires a 4-mm. objective with ×8 ocular. If the cysts are present, give free doses of chelonin, santonin and podophyllin, not the santonin and calomel, which does not appear to give positive results.

To recognize the expelled parasites, wash the feces with care; the organisms can then be seen with the unaided eye as longer or shorter, slender, worm-like objects. They have no internal organs, but their ectosarc shows an anastomosing network of fine lines under an amplification of ×1100, using apochromats and compound oculars. The lines I take to represent the myonemes present in organisms of the gregarine type.

The Source of Infection?

Difficult to say with any degree of certainty. At the present time I believe it to be found in common honey extracted without the aid of heat. I fancy that the two infections which I have suffered from have followed the eating of honey extracted in that manner. Should this supposition prove correct, the organism is of wide distribution, for the first infection must have had its origin in honey from California, the second in honey eaten while in Europe—Sweden.

Protozoa of the gregarine type are not believed to exist in the human being, though I think their occurrence in such a situation has been reported from South America. They are common enough in insects, earthworms and the like, where they cause peculiar lesions when in very great numbers. It is entirely within the range of possibilities that some forms may have their primary development in insects and reach their full development in the human being. This I believe to be the case in the present instance.

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[We wrote to Mr. Leiberg, making some further inquiries concerning his case. He replied as follows:

"There is not the least objection on my part to the publishing of my letter in your journal. On the contrary, the greatest publicity possible on the matter is invited. I shall take pleasure in replying to any inquiries relative to the case, and will gladly examine any specimens for purposes of identification which may be sent me by physicians, free of any charge whatsoever. My interest in the subject is wholly from the scientific standpoint. If a protozoan organism is at the bottom of diabetes mellitus, or of a disease so exactly resembling it that it cannot be differentiated either grossly or through chemical diagnosis, we cannot become acquainted with the fact any too soon. Specimens sent should be free from fecal matter clinging to them and should be immersed in either glycerin and water, equal parts of each, or in methyl-alcohol of 50-percent strength.

"The sugar in the urine and all other symptoms of diabetes mellitus have entirely disappeared and I am now quite restored to health. Will say that I am 57 years of age. During the last forty years have been ill but once. For the past twenty-six years have led mostly an outdoor life in the forests and among the mountains of the West during the summer seasons. Do not use tobacco or alcoholic drinks in any form.

"As I wrote you in my previous letter, I have suffered two attacks of the diabetic condition. Am unable to specify exactly how long after taking the worm remedy in

the first attack before improvement set in, but at the most not over a week could have passed. In any case, not more than three weeks passed before I was well. In the last attack 22 granules in four doses of the worm combination were taken on two days, with an interval of two days between each second dose.

"Within two days after I had taken the last doses improvement began. First the abnormal thirst disappeared and with that the daily amount of urine passed became much lessened. Vision cleared and the normal gait was restored. Periods of semi-stupor which now and again had marked the progress of the disease disappeared wholly. In ten days all traces of sugar in the urine had vanished. The appetite became normal. Am moderately fond of sugar, but in the latter stages of the attack I experienced a particular aversion for it, and a correspondingly increased desire for acids. Did not either in the first or second attacks try any of the food regimens advised for diabetes.

"Dear Doctor, of these propositions I am certain: my case, twice repeated, could not be diagnosed as any other disease than diabetes mellitus. Twice it has been cured, the last time beyond a doubt by an anthelmintic; the first time almost certainly by the same remedy. In the last attack the exhibition of the anthelmintic was followed by the expulsion of thousands of a protozoan parasite, and with their expulsion complete recovery ensued.

"These are the straight, unadorned facts, Doctor, no matter how strange they may appear or how much they may controvert accepted teachings as to the cause of diabetes mellitus. Yet I do not mean to assert that there can be no other causes for the condition we designate by that name. But it seems entirely within reason that cases similar to mine exist in other parts of our country, and abroad, too, for that matter, and which can be cured with the same or similar remedies.

"In my former letter I ventured the opinion that the organism under consideration might belong to the gregarines. While all the specimens I examined were devoid of differentiation of the body, yet it is not impossible that the organism is provided with an epimerit, or in case it should be classed with the acephaline division of the gregarines, it may yet be provided with holdfasts such as are figured by Calkins in 'The Protozoa,' page 59, figure E., a figure that very closely resembles the anterior portion of the organism we are discussing. Were such the case, some consideration as to the proper kind of anthelmintic to be employed would be necessary. It is improbable that the parasite could maintain its position in the alimentary tract unless it was provided with hooks of some sort, and the burrowing of thousands of individuals in the mucosa of the tract could scarcely fail to set up an intense irritation. Am unable to state anything definite as to the section of the alimentary tract inhabited by the organism, but it is neither the rectum nor the duodenum, in my opinion.

"I would suggest that the same remedy employed by me be tried in other cases, that is, this worm remedy. It may happen that either the podophyllin or the chelonin in the remedy [it contains chelonin, santonin and podophyllin.—ED.] has a specific action on the organism not possessed by other drugs. In my researches among the gregarines flagellates and ciliates living as parasites or as commensals in the intestinal tracts of insects I find great and unexplainable differences in the action of various drugs upon closely related species in the same host.

"I have ascribed the infection to honey. This, however, is a mere supposition and presents many difficulties. Still it is not impossible. It is only necessary to recall the number of species of sporozoa which are known to require as hosts a cold-blooded invertebrate and a warm-blooded bird or mammal in the complete cycle of development. Of course, some other vehicle than honey may have carried the infection. In my mode of living, however, in my food and drink I have for many years exercised the greatest possible care to avoid bacterial and other infection.

"I want to thank you, Doctor, for taking this matter up. At the first glance it would seem utterly incredible and unworthy of belief that a disease so long known as diabetes mellitus could be caused by an organism of this sort and its origin not long ago have been discovered. But the very simplicity of the thing has probably been the cause of turning the minds of investigators away from the true track. For my own part I should be inclined to disbelief had I not tested the matter in my individual case. At the same time it is well to restate my position in the matter, which is:

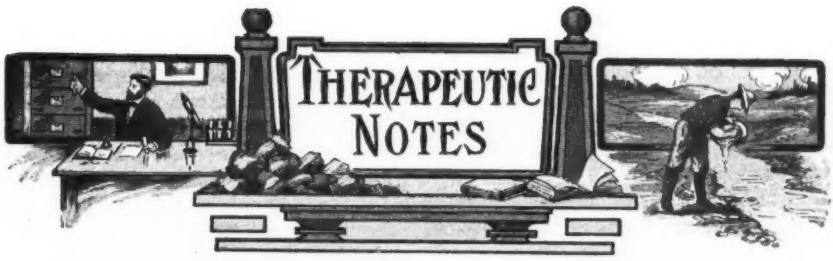
We have in America a disease which presents each and every salient symptom of diabetes mellitus and which is caused solely by a protozoan intestinal parasite, probably of the gregarine order; the administration of appropriate anthelmintics will cause the expulsion of the parasites; and the expulsion of the parasite quickly causes the disappearance of every pathologic symptom and condition associated with the disease and a restoration to health, in so far as the illness was dependent on the diabetic condition."

Mr. Leiberg's correspondence can hardly fail to create intense interest and, we hope, a new study of the etiology of diabetes. We want to make the suggestion that as many as possible send him samples of feces from suspected cases, *also sending samples to us*, that we may have them examined here in Chicago. Thus we may have mutual checks or "controls," and, we trust, escape error. The therapeutic suggestions made should be closely followed up in every case of diabetes resisting treatment. The "worm remedy" advised by Mr. Leiberg is available in granule form.—ED.]

The Master Questions

BEFORE performing any act, great or small, ask yourself these questions, and you will find in your hands the Master Keys that will give you entrance into Success Town: *What* shall I do? *Why* should I do this? *How* shall I do this? *When* shall I do this? Have a good reason for all your acts, and all the powers of concentrated Wealth, Fate, Bad Luck, Enemies, Chiggers, Hookworms and Unkind Gods cannot prevent you from winning for yourself Permanent and Increasing Success. And success is only another name for Happiness.

Thomas Dreier



COLD WATER IN FEVER

C. D. Phillips (*The Medical Times*, London, April 9, 1910) says: "As a mild but effective method of applying the cold-water cure to cases of fever, water beds are well adapted. By running cold water through the bed continuously the temperature of the patient lying on it may be to some extent controlled."

ETHER, ALCOHOL AND PHAGOCYTOSIS

E. A. Graham (*Jour. Am. Med. Asso.*), studying the effect of ether on certain processes of immunity, found that this agent markedly reduced the phagocytosis in infections with streptococcus, pneumococcus, staphylococcus aureus, bacillus coli, and bacillus typhosus. The reduction of phagocytic power of the blood after an ordinary ether anesthesia continued, in different experiments, over periods of two days' to several weeks' duration. This depression apparently was due to a direct effect of the ether both on leukocytes and serum, not to any effect on the bacteria themselves. Rubin showed that hypodermic injections of alcohol, ether and of chloroform render rabbits much more susceptible to systemic infections with streptococci and pneumococci, and that *in vitro* alcohol and chloroform diminish phagocytosis with respect to the pneumococci, streptococci and staphylococci.

Stewart showed that in normal human beings the ingestion of only a small amount of alcohol markedly lowered the opsonic index as to the streptococcus and tubercle bacillus. Others showed that animals to which alcohol and ether had been given succumb much more readily to experimental infection than do the controls, this being particularly the case with those infections the immunity in which was chiefly phagocytic. Moreover, it has long been known that alcoholism predisposes to pneumonia, erysipelas, etc., in which phagocytosis plays a part.

PHYSOSTIGMINE AS A PERISTALTIC STIMULANT

Physostigmine produces favorable conditions for peristaltic movement, indicated by stomach or intestinal inertia. Inject daily 1-200 to 1-60 grain of atropine sulphate and follow later by 1-60 to 1-20 grain of physostigmine sulphate. Begin with the minimum dosage and slowly increase. This will accomplish most excellent results. The injections may be made intramuscularly in the gluteal or crural regions.—Turck, *Medical Record.*

BUTTERMILK AND INFANTILE SCURVY

Ortiz (*Archives de Médicine des Enfants*, December, 1909, through *Medical Review of Reviews*, Feb. 1910, p. 84) has used buttermilk in feeding infants for several years with very satisfactory results, and was surprised to discover a typical case of infantile scurvy in one of the infants fed on this preparation. He searched the literature and was unable to find any reported case of scurvy in an infant fed on buttermilk. Some children do very badly on buttermilk. Monti be-

lieves the excess of albumin produces an intestinal autointoxication. Selter attributes the bad effects as due to the butter-fat, while Finkelstein believes the toxic phenomenon the result of the large amount of sugar. The author is of the opinion that the lactic acid is the offender.

He then describes the cases in which buttermilk in indicated, these including such conditions as chronic gastroenteritis and dyspepsia.

The buttermilk as recommended by the author is prepared as follows: A liter of buttermilk is placed in an enameled casserole and a tablespoon of flour is added. This is placed on the stove and constantly stirred until it reaches the boiling point. Three tablespoonfuls of sugar are added and the buttermilk allowed to boil for five to ten minutes.

The case reported by him is that of a typical case of scorbutus, which developed in an infant whose mother boiled the buttermilk for half an hour instead of ten minutes as directed. Orange juice was given and the buttermilk discontinued and the baby made a rapid and complete recovery.

The fault lay more in the prolonged sterilization of the food than in the buttermilk itself.

ARBUTIN IN CYSTITIS

Cardoso reported (*La Dosimetrie*) his employment of arbutin in cystitis. The first case was that of a lady afflicted with chronic cystitis extending to the ureters—urine cloudy, ammoniacal, charged with sand, not albuminous; micturition frequent and painful; pollakiuria; no calculi. Many instituted treatments had failed. The woman presented symptoms of slight uremia. Hematuria had endured two days. She was given oil of turpentine, to arrest hemorrhage, and in addition arbutin. The effect was rapid. After the bleeding ceased she continued the arbutin, in connection with alkalis and cicutine. In a few days she was much better and in two months was cured.

A professor of the school had chronic cystitis with an acute exacerbation, pollakiuria, rectal tenesmus and intense colitis. Treatment consisted in prolonged tepid baths, and administration of atropine and cicutine to effect, and digitalin, arbutin, and a laxative saline. Amelioration was rapid, the acute attacks subsided; arbutin alone was continued, and this cured the cystitis completely.

SEASICKNESS

Goyard (*La Dosimetrie*) sought to prevent seasickness by taking, before embarking, a dose of hyoscyamine, Gm. 0.0005, and strychnine sulphate, Gm. 0.001. As the attack came on this dose was repeated every fifteen minutes, then every ten minutes, and at last every five minutes, for two or three times; after that less often as the nausea subsided. In twenty-four hours he thus took, in all, 0.0115 Gram hyoscyamine and 0.023 Gram strychnine. By this time everybody else on board was sick, even the crew; but Goyard himself was easy. Appetite came, and he slept well all night. The only symptom was a little dryness of the throat and sleepiness, although ordinarily half a milligram of hyoscyamine would render him uncomfortable for two days.

Manassein recommended, for combatting this trouble, repeated doses of cocaine; Burggraeve, however, warned against this drug in the stage of vital depression accompanying seasickness.

TREATMENT OF FETID BRONCHITIS

Cardoso (*La Dosimetrie*) describes his successful treatment of a case of fetid bronchitis. A woman complained of dyspepsia, and a paroxysmal dry cough every morning. This was relieved by treatment. Four months later, after catching cold, she was seized with a cough, more persistent and frequent, with abundant fetid expectoration. Great pain was felt in the right shoulder. She had a febrile pulse; temperature was 100.76° F.; there were rough breathing, and sibilant râles in the median posterior part of the right lung; disseminated sounds in both lungs. Her breath

was extremely fetid. This was his treatment: Digitalin and aconitine to combat the fever, pushed to effect; helenin, strychnine hypophosphite, one milligram each every two hours. Blister over the tender spot. At the end of three days the sputa were completely modified, as well as their odor; fever had disappeared; cough was less but still annoying. Continuing the same medication and adding iodoform and codeine, the patient was cured in six days.

CREOSOTE IN TUBERCULOSIS

R. W. Philip (*The Medical Times*, London, April 9, 1910) says that prolonged use of creosote has led him to the conclusion that creosote exerts a beneficial, and even curative, effect in the more chronic forms of pulmonary tuberculosis. Cough and expectoration are often reduced remarkably, secretion being lessened and thereby the need for cough removed. The gastrointestinal tract also benefits, while appetite improves and the complicating diarrhea is frequently relieved. In the author's experience disturbing effects are not observed when pure beechwood creosote has been used; and still more rarely does renal trouble ensue, although "an eye must be kept on the urine, nevertheless."

VERATRUM VIRIDE

John H. Landis read before the Academy of Medicine of Cincinnati an interesting paper on veratrum viride, which was published in *The Lancet-Clinic*, April 16. Dr. Landis says that after eighteen years of clinical experience with the drug, under a constantly widening variety of pathological conditions, he has come to regard it as the most valuable single therapeutic resource at his command. Its value lies in its power as an eliminant, and when we consider that elimination in strictly medical cases is of the same enormous importance as drainage is to surgery, it cannot be overestimated. The value of veratrum further lies in its power to overcome sthenic states and thereby actually abort or modify in a favorable way acute inflammatory conditions, and in its power as an antispasmodic. Possibly the drug increases the normal resistance to inflammations or acts as an antidote to toxins. Possibly it works through the vasomotors, restoring the normal condition in inflammatory areas in which the vasomotor control had been lost. In these conditions of acute inflammation with high fever, full rapid pulse, and impending or actual delirium, its action is little less than magical. Under the influence of a 10-drop dose of the tincture at half-hourly or hourly intervals, the whole picture is changed in a few hours. The pounding heart becomes almost or quite normal, the pulse soft and compressible, the skin moist, the fever subsides, the mental disquiet gives way to a state of calm, and the condition is changed from one of imminent danger to one of comparative safety.

ADVANTAGES OF ALYPIN ANESTHESIA

F. M. Fernandez, Havana (*Therapeutic Gazette*, January 1910) says that alypin produces the same anesthetic effect as does cocaine, without dilating the pupil, which is of particular advantage in ophthalmology. He has used alypin for a considerable time, without noticing any unpleasant effect, for the removal of foreign bodies, or the excision of superficial growths, prior to the application of silver nitrate and other caustics.

In otorhinolaryngology the author has used the drug even more extensively and with so satisfactory results that he almost discarded cocaine. It should be noted that alypin and stovaine are very closely related.

Combined with adrenalin its anesthetic effects are prolonged and more intense.

FORMIC ACID AND BEE STINGING

Arthur P. Luff (*The Lancet*, London, March 12, 1910, page 715) says that bee poison contains in addition to formic acid an alkaloidal base akin to the venoms, but it would appear that the action of bee poison in rheumatic subjects is attributable to its formic-acid constituent. It is possible that if the direct stinging with bees is of any

efficacy in the treatment of rheumatism, it is simply due to the action of formic acid as a counterirritant. Dr. Luff has had no experience with the treatment of rheumatism by means of bee stings, but a few years ago, gave an extensive trial to the treatment of several forms of chronic rheumatism by means of formic acid, administered internally. The results, however, were so discouraging, and compared so unfavorably with the results obtained by other methods of treatment, that he has completely abandoned the use of formic acid.

ADONIDIN AND THYROID

Dr. Heinrich Stern (*Medical Review of Reviews*, Feb. 1910, p. 76), recommends the addition of a cardiac tonic to thyroid whenever the latter preparation is to be used for any length of time. His decided preference is for adonidin. He recommends the following formula:

Sodium cacodylate.....gr. 1-200
Adonidin. .....gr. 1-30
Thyroid gland (dry powder) gr. 1
For one compressed tablet.

Adonidin is high in price, but readily obtainable in granule form. In its absence caffeine may be substituted in doses of 1-6 grain.

QUININE AND CANCER

Dr. Franz Stroné has used quinine in cancer with good results (*Med. Klinik*, November 28, 1909, through *Medical Review of Reviews*, Feb. 1910). He has used the pure alkaloid and its salts in many cases of epithelioma, and in all instances he has observed the same sequence of events, viz., formation of tissue-detritus, great increase in the size of the sore, scar formation with ultimate healing. He offers the following practical therapeutic hints:

1. The quinine is mixed with water to a pulpy mass and spread on the wound by means of a pledget of cotton.

2. The dressing (bandage) is changed every two days.

3. The quinine is employed as long as the sore seems to increase in size from one dressing to another.

4. This treatment is a good means of differential diagnosis, especially when we have to decide between beginning epithelioma of the cervix and an ordinary erosion.

5. It is also a priceless means for the palliative treatment of inoperable cancer of the uterus, and especially of the portio and vagina.

6. The author also believes that before performing a radical operation, it would be practicable to treat a uterine carcinoma with quinine for a few days, especially if there is any doubt whether the lesion is cancerous or inflammatory in nature.

NARCEINE IN DIABETES

It is well known that morphine and codeine have the power of checking glycosuria, but several authorities assert that this is not equal to the control exerted by opium itself. It seems, therefore, that there must be an agent in opium that is more efficacious than either morphine or codeine. Naturally we would look to the alkaloid most nearly allied to these two, namely, narceine. Since the quantity of this alkaloid found in opium is very small, it must be assumed to be a small-dose effect that is exerted in diabetes. I would advise a trial of narceine in doses of one milligram four times a day, gradually increased if necessary.

SUCCESSFUL TREATMENT OF DYSENTERY

Lorenzana's patient (*La Dosimetrie*), a man aged 34, had acute asthenic dysentery: extreme prostration, tongue blackish, pulse small and slow, temperature 98.9° F., abdomen tympanitic, stools bloody. He was given a laxative saline, followed by strychnine arsenate and hyoscyamine, a granule each every half-hour, hour or two hours, according to effect; and 2 granules of quassin every three hours; chicken bouillon. On the next day the patient's strength had increased, but the stools were still bloody.

Treatment was changed to tannic acid, 4 granules three times a day. Two days later the stools were soft, with no blood. Of the alarming clinical picture only the weakness remained. Strychnine and iron arsenates were given, and recovery ensued.

ATROPINE AND PHYSOSTIGMINE IN HYPERCHLORHYDRIA

No systemic drug-treatment for hyperchlorhydria and its associated conditions can be compared with the hypodermic injection of atropine, followed later by physostigmine. Atropine has a quieting antispasmodic effect, yet does not check peristalsis. It also renders the mucosa less sensitive to local irritation causing spasm.

GUARANINE FOR NEURALGIA

A girl, aged 13 years, had supraorbital neuralgia, with vertigo and headache. She was given guaranine, 3 granules three times a day for five days. The headache had disappeared and the vertigo was better. She was then given caffeine valerianate for two days, when the cure was complete.

A woman, aged 30, had severe hemicranias, almost constantly, followed by vomiting and delirium. Guaranine was given, 3 granules three or four times a day. The headache moderated, and ceased by the time she had taken 100 granules. No sensible effect was noted from the doses given.—Alessandri.

APPLICATIONS OF CICUTINE

Gubler said (*La Dosimetrie*): "Cicutine is not only hypokinetic, it is also stupefiant or anesthetic, and finds its place in affections eminently dolorous. But it is especially in maladies hyperesthetic and spasmodic, of the respiratory apparatus, which serves it as an avenue for elimination (as in the cough of quinsy and of pertussis), that cicutine is called on to render great services. Only, to take advantage of its volatility, it is necessary to avoid its association with acids, and to employ it free, dissolved in alcohol and diluted into a potion." But cicutine in solution decomposes so rapidly that this is not advisable.

CHLOROFORM POISONING

At a late meeting of the Washington Obstetrical Society J. F. Moran reported a case of alleged chloroform poisoning following forceps delivery. The symptoms of poisoning occurred two days after the confinement and the patient died three days later. Jaundice was a prominent symptom.

BURGGRAEVE'S OBESITY REGIMEN

Burggraeve recommended:

1. A morning laxative saline.
2. At meals quassin and sodium arsenate.
3. At bedtime strychnine arsenate, digitalin and aconitine.
4. Mixed diet, animal and vegetable.
5. Active exercise.
6. Hydrotherapy.

SPITTING, VENTILATION AND PNEUMONIA

Careless spitting and lack of ventilation operate in the development of consumption as in pneumonia. The laws of hygiene for one apply with equal force to the other.

The people who have contracted pneumonia since the cold weather set in have either recovered or died. Pneumonia is a disease which shows itself quickly, and which quickly runs its course. On the other hand, the people who have contracted consumption this winter are just beginning to wonder why their "bad colds" hang on so long; why it is that they feel a little "offish" each afternoon.

Our plea to this latter class is that they shall go at once to the most competent doctor they can afford to consult and there get an honest diagnosis. If a doctor cannot be afforded, go to one of the free dispensaries of the Chicago Tuberculosis Institute. If this action be delayed until next summer it will then be too late to get well. If people

will discover their tuberculosis early, and then live right, they will get well.

Why neglect your colds and die when a little trouble now would give a good chance to live?—*Chicago Health Bulletin.*

THE CAUSES AND TREATMENT OF RHEUMATIC FEVER

Wm. S. Gordon in *The Virginia Medical Semi-Monthly*, for March 25, 1910, says that in the treatment of rheumatism diet holds an essential place. In a pure infection, allow as much stimulating proteid food as the general condition of the patient justifies. On the other hand, if there is over-production or defective elimination of uric acid, we are prolonging the malady and endangering the patient's present and future welfare by allowing him a diet rich in nitrogen or other uric-acid producers. There is a tendency at present among some of the profession to belittle the role which uric acid plays in the causation of disease. Haig may have gone to one extreme in his views but his opposers have gone to the other. Whatever be the nature of gout and rheumatism, every practical physician realizes that they are amenable to treatment, provided the patient will carry out his instructions. But diet is not all. It is almost a matter of as much importance to open the doors by which the poison goes out as to close the doors by which it goes in. Hence, elimination must be obtained through the bowels, kidneys and skin. Sunlight, fresh air, and exercise must be used when practicable, while coincident conditions, when threatening or troublesome, must be met by appropriate measures, medicinal or otherwise.

HICCOUGH AND ITS TREATMENT

The Practitioner of April, 1910, page 550, says that for practical physicians, severe hiccough has a special interest in fevers and pulmonary diseases, as indicating a grave prognosis, and in directing attention to blood stasis in the lungs and pulmonary arteries, and to a failing right heart. The position of the patient in bed must be changed frequently, stimulating sinapisms should be applied to the chest, cardiac and respiratory stimulants, alcohol, ammonia, strychnine, and atropine should be considered, and in many cases an emetic may be given. Possibly jugular phlebotomy may help in suitable cases, and inhalation of oxygen, artificial respiration, citric and tartaric acids are advocated. In the gastrointestinal variety, not dependent on rupture of intestines, lavage or an emetic, with or without a full enema, may be followed by antiseptics and gastric sedatives. Lithemic conditions frequently supply the key to rational treatment. In chronic cases, besides the local treatment, one would seek to restore the tone and control of the nervous centers by tonics. While these indications are being pursued, and where the recurrent spasm is exhausting a feeble subject, nothing is so immediately and generally effectual as pressure with the thumbs and nails upon the supraorbital nerves.

MEDICAL TREATMENT OF INGROWING NAILS

The American Journal of Dermatology, and Genito-Urinary Diseases, quoting an exchange, says (April, 1910, page 176) that free application of dry powdered alum is sufficient to cure every case of ingrowing nail in about five days. The applications are not painful, and the destruction of the pathologic tissue results in the formation of a hard, resistant and non-sensitive bed for the nail, a perfect cure for the ingrowing tendency. The non-toxicity of the alum, its easy application and the good results render it the treatment of choice for cases in which surgical treatment is not contemplated. A fomentation of soap and water is applied for twenty-four hours beforehand, and then the alum is applied in the space between the nail and its bed, tamponing with cotton to keep the alum in place, and repeating the application daily. Under this treatment the suppuration rapidly dries up, and the pain and discomfort are relieved almost at once. The method is deserving of trial and reports.

Neuralgias and Their Treatment

A GREAT pain of more or less intensity does not necessarily constitute a neuralgia. The word "neuralgia" denotes pain which affects a nerve in its entire length or only a part. Certain points characterize this pain, viz., points where the pain is more particularly felt upon pressure. These points are at the emergence of a nerve on its passage through a bone, or at points where nerves pass from deeper layers to the surface.

Although very obstinate, a local pain does not constitute a neuralgia, necessarily. Thus a contusion will induce pain in the nerve terminals without, however, the pain being felt in the entire course of the nerve. Pressure made on a nerve in its course does not give a series of painful points but rather a series of painful areas spreading out from those points.

In intercostal neuralgia the diagnosis is easily made by discovering the pain at the corresponding spinous processes. In sciatica and in neuralgia of dental origin the painful points have been sufficiently located, so that it would be useless to enumerate them here; so, too, have been the points in facial neuralgia determined. The intensity of the pain is frequently defined with difficulty, for there is always something personal in it. Thus a pain without any discernable cause of any lesions may be felt by a neurasthenic person with great intensity, while a pain which naturally should be very lively may be felt by him with a less degree of intensity; at any rate, it will make itself felt by a neurasthenic differently than any other person would experience the same. We can grow accustomed to pain. Thus a working woman habituated to a rough and laborious life will, evidently, be less apt to complain (and she really does feel less) than a woman accustomed to luxury, and leisure to study out and feel out all her ailments.

When we get a case with neuralgia, the first thing of importance is to discover the cause. That cause may depend on some local lesion or on some general affection or it may depend on a diathesis. In an alcoholic person, an intercostal neuralgia, which is very frequent in such cases, may be due not only to intoxication but also, and that more frequently, to a hepatic lesion or some lesion of the stomach. In metritis intercostal neuralgias may depend on anemia or on chlorosis following an unusual menstrual flux, or also on gastric troubles connected with that chlorosis. There also are neuralgias of rheumatic or of syphilitic origin, or they may be owing to paludic infection. Neuralgias owing to chlorosis or anemia are the most obstinate.

What physician has not been baffled in treating some case of sciatica? Is it a kind of rheumatism? Does it depend upon the condition of the genital organs? Is it due to an excess of horseback riding in cavalry service? Is it the result of hemorrhoidal affections from a sedentary occupation? The same embarrassing situation may be encountered in other neuralgias. A neuralgia connected with the teeth may arise from rheumatism of the alveoli, or it may have the caries of a tooth as its point of departure.

There is something special in the case of syphilis. An exostosis may produce pain without the pain indicating a neuralgia, and yet some neuralgias have syphilis as their originative cause. These neuralgias must not be confounded with pain from exostosis, for in the latter case that pain does not exist when pressure is made on the apophyses [points of exit] of the corresponding nerves.

The continuity of the pain or its intermittence are not sufficient to establish a diagnosis of neuralgia or to determine its nature. Certain neuralgias are painful at certain moments and during a certain period of time. There is a periodicity which does not indicate paludic intoxication. Periodicity and intermittence have their value in fever only.

A local lesion may, in time, end in a neuralgia, and this is what may be observed in dental lesions. A tooth which at the outset perhaps does not cause more than a very acute pain may in the course of time produce a neuralgia in that part of the trifacial nerve which is distributed to the affected maxilla, and may a little later affect all the branches of the nerve and thus enlarge the field of its painful action.

Generally speaking, when the trouble is in the course of a nerve of many branches the disease attacks, successively, one branch after another as if the lesion were propagated from the branches to the trunk of the nerve and thence to other branches.

In rheumatismal neuralgias the manifestations are manifold, and the pain frequently alternates with that of the joints.

In pleurisy, not less than in the pain from syphilitic exostosis, the absence of pain on pressure upon the corresponding apophyses does away with any thought of neuralgia. On the other hand, it is unnecessary to remind the reader how often we have made the erroneous diagnosis of neuralgia, how so often neuralgias are mistaken for cardiac pains in chlorotic and neurasthenic women.

When neuralgias have been of long duration, then the hyperesthesia of the nerve terminals is succeeded by a kind of an anesthesia and the sensibility is blunted. Is there not here, then, an alteration in certain corresponding centers of the spinal cord? It is in sciatica that we observe this phenomenon most frequently.

When a neuralgia depends upon a cachexia, then the nature of that cachexia exercises an influence on the seat of the neuralgia. In chlorosis it is the trigeminal nerve, and the nerves of the solar plexus, that are more frequently affected. In paludic cachexia it is the ophthalmic nerve that suffers most.

Gastric and intercostal neuralgias are met with in women who are exhausted by too abundant menses or by leucorrhea.

Neuralgia, whatever its cause or location, demands, first of all, suppression of the pain, and after that treatment for removal of its cause. However, there is no other kind of treatment that can be so much varied as that of neuralgia.

The dosimetric [alkalometric] physicians are well armed for the alleviation of that pain, for, aside from revulsive measures, under whatever name known, they, like all other physicians, have at their disposal a whole series of remedies in the form of granules that are simple yet exceedingly efficacious. And here are the principal ones, to wit:

Granules of monobromated camphor of 1 centigram (gr. 1-6); of atropine of 1-2 milligram (gr. 1-134); of cicutine hydrobromide, or the hydrochloride, of 1-2 milligram (gr. 1-134); croton chloral of 1 centigram (gr. 1-6); quinine valerianate of 2 centigrams (gr. 1-3); iron valerianate of 2 centigrams (gr. 1-3); hyoscymine of 1-2 milligram (gr. 1-134); morphine hydrobromide, or the hydrochloride, of 1 milligram (gr. 1-67); quinine hydrobromide of 2 centigrams (gr. 1-3); quinine hydroferrocyanide of 1 centigram (gr. 1-6) and also of 1 milligram (gr. 1-67). There is also a cicutine granule of 1-2 milligram (gr. 1-134); an aconitine granule of 1-2 milligram (gr. 1-134); granules of gelsemin of 1 milligram (gr. 1-134); of cannabin tannate of 1 milligram (gr. 1-67). In addition to these we have a number of compound granules.

In every case of neuralgia we must, of course, make use of some specific remedy, besides the necessary pain-allaying medicaments.

Thus, for instance, in syphilis we use the compound granule of protoiodide of mercury, 1 centigram (gr. 1-6), and strychnine, 1-2 milligram (gr. 1-134), which does good service when given in dosage of four or six granules daily.

In rheumatism and in gout we give ureol [a compound of urotropin, sodium and lithium benzoate], which is the best uric-acid solvent. To this we add colchicine, or better still, give the latter in its combination in the compound granule which consists of colchicine, 1 milligram (gr. 1-67); aconitine, 1-2 milligram (gr. 1-134); digitalin 1-2 milligram (gr. 1-134); strychnine arsenate, 1-2 milligram (gr. 1-134).

In paludic affections we add to the quinine salts the sulphate, or still better the arsenate, of strychnine; and this forms the surest and most efficacious treatment.

In anemia and chlorosis the compound granule consisting of iron arsenate, 1 milligram (gr. 1-67); quassin, 2 milligrams (gr. 2-67); quinine hydrobromide, 1 centigram (gr. 1-6), will serve well to battle with the diathesis. The granule of hydroferrocyanide of quinine will also serve the same purpose, and may be added to the above.

To allay the pain, dosimetrists may choose from among several most efficacious compound granules. Thus, for instance, if the pain is spasmodic the antispasmodic granules will have to be used, and if the pain is neuralgic only, then the antineuralgic granules are given. Here are their respective formulas:

Antispasmodic Granule

Strychnine arsenate, 1-2 milligram, or gr. 1-134.

Hyoscyamine, 1-2 milligram, or gr. 1-134.

Morphine hydrochloride, 1 milligram, or gr. 1-67.

Antineuralgic Granule

Quinine valerianate, 0.02 centigram, or gr. 1-3.

Aconitine (amorphous), 1-2 milligram. or gr. 1-133.

Hyoscyamine, 1 milligram, or gr. 1-67.

In sciatic neuralgia the best effects are produced by aconitine, gelsemin, and cannabin tannate, combined.

Among the dosimetric [alkaloidal] granules there is one to which I would call especial attention, and this is that of quinine hydroferrocyanide. In neuralgias of doubtful origin this agent has proved particularly efficacious in my hands. I have spoken of it elsewhere before.

The last time I employed this preparation (with hardly anything else) was for intercostal neuralgia in a young anemic lady, the attacks occurring two or three days after her menses, which were very abundant. She also had leucorrhea. These neuralgic attacks would not cease at all except at the moment the menses appeared, and then made their appearance again a few days after. At the moment when the neuralgia stopped it would be followed by cephalalgia. At the end of eight days, during which she took 10 granules of hydroferrocyanide of quinine every twenty-four hours in ten doses, the attacks ceased and never returned; and this was more than six months ago. The entire condition of this young woman improved, the menses also becoming regulated; they do not now last as long and especially are less abundant. For fifteen days during every month I had her take the hydroferrocyanide granules, but only three a day.—Dr. Pigeaud, in *La Dosimetrie*, March, 1910, p. 43.

IRONING AS A MEANS OF PROPHYLACTIC DISINFECTION

In a recent article, K. Svechla discusses the subject named in the title. Linen, wool and cotton goods are very liable to become infected with the germs of communicable diseases. The author made a test to find out how far hot-ironing will affect these bacilli carriers bacteriologically. He touched such an infected material with agar cultures and after moistening the same, a single passage of the hot flat iron was sufficient to sterilize its surface, especially when thinly woven. But the effect of a single passing over the moistened surface does not penetrate very deep. For the thorough destruction of the germs the ironing must be repeated several times. Thick material, such

as woolen cloth can not be sterilized by ironing. But inasmuch as bacteria brought in contact with thick fabrics do not penetrate into them but remain on the surface, they naturally become exposed to the action of the hot iron.

The author considers this mode of disinfection practical in case of linen cover garments put on before visiting infected patients. If these garments are moistened and ironed each time after such use, the author thinks a sufficient germicidal effect would be obtained.—*Arch. f. Hyg.*, 1909, 70, 4.; in *Pharm. Zentralh.*, 1910, p. 160.

POTATO (OR SOLANINE) POISONING

According to Haselberg potato poisoning can not be traced to the solanine content, because of the minute quantity of the alkaloid, which is 0.24 Gram *pro mille*, which should exclude the possibility of poisoning. Neither can putrefactive bacteria, which, according to Schmiedeberg and Schül, increase the percentage of solanine, be made responsible for potato poisoning. But Dieudonné showed, in a case where a large number of persons were poisoned, that a pure culture of the proteus vulgaris could be raised on the potato salad they ate, and that the poisoning effect could be ascribed to the endotoxin contained in bacilli. By others, again, it was noticed that the bacteria in these cases are mostly of the bacillus coli group, and these bacteria increase very rapidly on the media of warm potatoes.—*Med. Klinik*, 1909, 32.; in *Pharm. Zentralh.*, 1910, p. 160.

INTERCOSTAL NEURALGIA

W. Janowski observed intercostal neuralgias 440 times in a total of 4,800 patients, i. e., in 9 per cent of his patients, and found the sexual ratio to be females 71; 29 males taken in a hundred. The ages ranged mostly between 21 and 40 years. In 70 per cent the neuralgias were on the left side, in 17 per cent on the right side, and 13 per cent bilateral. The prevalence of cases on the left side may be owing to a slight congestion of the blood in the veins of the left side of the body. (Henle.) The causes may be direct and indirect ones. Indirect causes are predisposing conditions, neurasthenia, uric-acid diathesis, and phthisis. Direct causes are colds, preponderatingly, then come infectious diseases (influenza, tonsillitis), pleurisy, bronchitis, cough, nervous irritations, and vasomotor influences.

The diagnosis is easy when we think of the points of pressure. Prognosis is favorable. 95 percent are cured. A recommendable energetic therapeutic means, according to Janowski, is cantharidal plaster applied directly over the painful points, repeated, if need be, after six or ten days. At the same time the predisposing causes must be removed.—*Wratch Gaz.*, No. 51, 1908; in *Wien. Med. Woch.* 1910, col. 240.

A GIANT INFANT

Dr. Demetrio Galatti presented to the *Gesellschaft fuer Innere Medizin und Kinderheilkunde* in Vienna, at its session, December 16, 1909, a giant nursing infant four months and ten days old. The boy weighed, at birth, 4370 Grams (9 1-3 pounds); his height was 57 centimeters (23 inches). He is nursed by his own mother. The boy now weighs 9500 Grams (20 1-3 pounds), and measures 72 centimeters (28 4-5 inches). —*Wien. Med. Wochen.*, 1910, col. 286.

ORIGIN OF ATMOSPHERIC OZONE

According to the researches of Bouyssy and Henriet ozone is formed by the ultra-violet rays of the sun. The ozone-content of the air is, therefore, greater on sunny days, also when winds blow from the southwest, and when it rains. Ozone is said to form in the higher strata of the air and is brought down thence by the southwest winds, which also originate there. The same is the case with the rain, the drops of which are surrounded by ozone which they bring down to the earth. The contrary is the case with carbon dioxide, which originates in the earth and increases in the air when there is less sunshine, southwest winds and rain.—*Oester. Chem. Ztg.*, in *Pharm. Zentralh.*

Nuclein or Climate: Which Did It?

WE print below a personal account of one of our friends on the firing line, who describes graphically his own experience with the dreaded Great White Plague. We may talk wisely and give sage counsel to our patients; but when the matter comes home to us as closely as it did to Dr. Steele, we forget our medical lore and wisdom, and become "just patients," on the lookout for anything that will help us.

The doctor had pneumonia in February, 1909, and several relapses of the same affection, developing pulmonary tuberculosis. (By the way, the pneumonia may have been tuberculous itself.) Living in Santa Fé, the high altitude caused him to have a hemorrhage, which returned two weeks later and caused extreme prostration. The doctor eventually went to Artesia, N. M., and under date of February 11, he wrote to us as follows:

"Well, Doctor, I have had a fight of it, but I feel I am on the mend. After I had my last hemorrhage October 27, I seemed to gain for a while but relapsed and by Thanksgiving I could barely walk 200 feet for my meals; my temperature when resting was 99.4° F., but on the slightest exertion it would jump up high. At this time I used two doses of nuclein, eight drops hypodermically; the first dose raised my temperature to 99.8° F. Next morning I repeated and when the temperature went up to 101° or higher, I discontinued the remedy, for I felt that I could not take it. My temperature then went each evening a little lower than before, the sputum lessened in amount, and I felt somewhat better for a few days. Soon, however, the temperature began to increase again. I tried another dose of nuclein with the same results and with a burning of the skin added.

"By this time I was getting in bad shape, had lost some more blood and was losing flesh and strength very fast. I told my friends here that there had to be something done or I was going to 'cash in' soon. I felt as though it was not long, either. I got some triple arsenates with nuclein out of my case and tried it at bed-time. At first this increased the temperature a little and after four or five doses I tried the hypodermic again. I took it at about 5 p. m. and that night I lay in a bed of needles and never closed an eye; to add to it all I was here among strangers and in a shack by myself, and it all made me very blue. I made up my mind that I might just as well go one way as another, so I continued to use the nuclein every other evening, and while I could not sleep, it did not produce such marked reaction. After a few days I thought I could notice some improvement, therefore I kept right on and the temperature rise began to come later each day and to be less high. After a while my friends no-

ticed that my face had more color. Before this I had lost all of my color and strength and I could hardly talk. Well, to help it all out, I received a fine Christmas present: my wife and only child arrived at 1 a. m. at my shack. She was much pleased with my condition.

"One of my friends came in one morning and wanted me to go and see his wife, if I thought it would not hurt me. I was still in bed and told him I would go over as soon as it warmed up a little. This was about the second of January. My wife hitched up the horse and I went to visit that patient and I drove as far as would be around two squares and it did not seem to hurt me. This was the first time I had been in a buggy since Nov. 10 and then my temperature had gone to nearly 102° F. A few days later I was weighed and found my weight 142½ pounds, while on December I could not have weighed more than 125 or 128.

"Here is my condition now: I drive every day, my face has more color in it, I sleep better, eat very well and I am gaining fast and feel as though I had a chance with the rest of them now. Before I commenced to use the nuclein I raised from three to eight ounces of expectoration a day. Now I don't spit up more than one to two ounces and do not have such hard coughing spells as formerly. I feel certain that if I had not commenced the use of nuclein or gotten something else to help me I would have been in my bed some time ago.

"We are preparing to travel around this summer and spend the hot months in the mountains, fixing up a camp wagon and other things to make us comfortable and go and come as we please. I feel that I should not get into the high altitude on account of the hemorrhagic tendency. My Ohio friends want me to go to Colorado Springs to the Modern Woodman Sanatorium, but I feel that 6,000 feet is too high for me. We are 3,300 feet above the sea level here and I can get into the foot-hills of the mountains and not get over two to four hundred feet higher than I am here. By going as we shall, the change will not affect me as it would to make this change on cars.

"Doctor, I have learned lots about tuberculosis here that I never saw in Ohio. Where I was practising every patient that contracted tuberculosis died unless he went away and stayed away. Lots of tuberculous patients leave for the West, get homesick and return, soon to pass to the Great Beyond. I used to blame them for coming back, but nobody knows what it is to leave home, friends and all, to go among strangers and have the burden of caring for oneself, and of seeing one's strength leave him more and more daily."

J. H. Steele.

Artesia, N. M.

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We shall watch with interest and sympathy for more and, we trust, increasingly favorable reports from this brother. He seems on the road to recovery, thanks to the nuclein (which seems to be accomplishing so much in these cases), the climate of the Southwest and the love and help of the good wife. May he continue to grow stronger and eventually become entirely well.

ROUND TABLE ON THE TUBERCULOSIS PROBLEM

In Clinical Medicine for May, page 578, we submitted to our readers a number of questions on various subjects connected with tuberculosis and the tuberculous. During the same month we sent a set of other questions to more than one hundred specialists in tuberculosis. These questions concerned subjects which can only be solved from the knowledge gained by large experience. Thus far we have received only a limited number of replies to these interrogatories. Nevertheless, while the number responding has

been small, the ideas presented will prove helpful. They have been assembled and are here presented in a very condensed form.

There is nothing surprising in the fact that the opinions vary on certain points, and we shall attempt to reproduce for our readers the important facts as well as the differences of opinions.

"Question 1. What cases of tuberculosis are adapted for climatic treatment away from home?"

The selection of cases for climatic treatment depends on individual factors. The most favorable cases are those that are also favorable for home treatment, that is, early cases and latent advanced cases. Dr. Ashmead insists on the selection of a dry climate for cavity-cases. Drs. Ballard and Pottenger point out the very important fact that patients sent from home must have sufficient means for support. Drs. Petit and Placak favor the home climate for tuberculous patients.

"Question 2. What is your opinion on the drug-treatment of tuberculosis? How do you treat cough in consumptives?"

While tuberculosis as such is not amenable to drug-treatment, there are constantly conditions arising in the tuberculous which must and can be met with properly selected remedies, although very often such conditions can be overcome by careful management. In any case, the drug-treatment in tuberculosis is largely symptomatic.

Cough requires perhaps the most careful attention, and we must not forget that it is a physiological phenomenon which has the purpose to remove infected and objectionable material from the bronchi; on the other hand cough is very frequently a bad habit and can be overcome by training the patient's will power. If the cough is persistent and disturbs the patient's rest, the milder expectorants and sedatives (codeine, heroin) may be indicated.

"Question 3. The dietetic management of tuberculosis patients?"

The diet suitable for well persons is in general also suitable for consumptives. Forced feeding in the sense of stuffing is condemned unanimously, since, as Dr. Cladmon puts it, *"it is what the patient digests that counts and not what he eats."* While a conservative gain in weight is favorable, the mere fattening of patients is not only useless, but often productive of harm.

"Question 4. What, in your opinion, is the best treatment for hemoptysis?"

The best treatment of hemoptysis is rest; opiates may be needed. Dr. Pottenger shows the necessity of differentiating between hemoptysis from an open vessel and congestive hemoptysis. In the first variety the blood pressure must be lowered; in the latter the heart and circulation need stimulation. Ergot is condemned almost universally. Atropine, also the nitrites, often are useful.

"Question 5. What information can you give on the influence of climatic and meteorologic conditions upon the occurrence of hemoptysis?"

High altitudes, oppressive days with high degree of humidity, sudden meteorological changes, appear to favor the occurrence of hemoptysis.

"Question 6. Is hemoptysis always a serious prognostic sign?"

In early stages hemoptysis may be a favorable symptom, in cavity-cases with rapid softening it is of more serious import. In the third stage it generally means the beginning of the end.

"Question 7. Have you any experience in the use of nuclein?"

Dr. Ashmead has always used nuclein with favorable results, and Dr. Cladmon for many years with unquestioned benefit.

"Question 8. What cases may be successfully treated at home? What cases will do better in sanatoria, and why?"

The sanatorium treatment has the decided advantage over the home treatment

that the entire management of the patients, which in tuberculosis is of the highest importance, is under the complete and constant control of the physician. Provided the financial status of the patient is good and he does not unduly suffer from nostalgia, a course in a sanatorium is unhesitatingly to be recommended not only for its therapeutic but for its educational effect. As a general proposition, a sanatorium situated in a climate as like as possible to the home climate is to be preferred.

As to the subquestion,"What cases will do better in sanatoria, and why?" early cases are more apt to be favorably influenced by any treatment. For far-advanced progressive cases invalid homes should be founded where they might be cared for and the danger of dissemination of the infection be minimized.

Theoretically all patients should do well at home if they strictly obeyed the rules and the outside influences could be regulated for the best; this not being feasible, sanatorium treatment offers decided advantages.

REPORTS OF EXPERIENCE WITH CROTALIN

In *The Boston Medical and Surgical Journal* for April 15, 1910, Dr. Thomas J. Mays of Philadelphia published a preliminary report on his success with crotalin in the treatment of certain wasting diseases, notably pulmonary phthisis.

Crotalin is the dried, yellow, scaly granular residue of evaporated rattlesnake venom, and is soluble in water. The remedy was employed hypodermically in the following manner:

Crotalini	gtt. 1
Glycerini	m. 100
Aquae destillatae	m. 400

Two and one-half minims of this solution represent 1-200 grain of the venom, which Dr. Mays held to be the minimal dose. He assumed that the improvement in the pulmonary cases which he described was mainly due to the action of crotalin, although the exact mode of this action could not as yet be explained.

In THE AMERICAN JOURNAL OF CLINICAL MEDICINE for December, 1909, the same investigator contributed a further paper on crotalin, in which he discussed its action, especially in disturbances of the respiratory nervous system. It is well known that Dr. Mays attributes pulmonary phthisis to neuroses of this nature. (See Thomas J. Mays' "Pulmonary Consumption," 1901).

The latest contributions from Dr. Mays appeared in *The Boston Medical and Surgical Journal* for January 13, 1910, and in THE AMERICAN JOURNAL OF CLINICAL MEDICINE for April, 1910, p. 210. These deal mainly with the administration of the remedy.

Shortly after Dr. Mays' first paper crotalin was prepared in tablet form for hypodermic administration, in response to the requests from practicians throughout the country. So far as we are aware, crotalin has not been tested in any laboratory on animals and we are therefore not in a position to account for its peculiar action. However, we present herewith abstracts from clinical reports, both favorable and adverse, from physicians who have used the remedy. The time since its introduction is all too short to permit of anything like a positve opinion regarding its value being ventured, and we refrain from doing so, leaving our readers to draw their own conclusion.

We would say, however, that crotalin is an albuminous substance and heterogenic to the human species. As has been determined by investigations in immunity the introduction of a heterogenic albumen into the circulation produces a condition of allergie, which may manifest itself by fever, pain, malaise, etc. We see similar reactions follow the administration of tuberculin, of nuclein, and other proteids.

Is it too far-fetched to suppose that the action of all these substances, being

similar, must be subject to similar or even like biological principles? We must leave the question open, and do not hesitate to do so, since even in the instance of tuberculin twenty years of close and extensive study have not succeeded in supplying an unobjectionable explanation of its action.

These reports on crotalin are all from physicians in general practice and we have endeavored to select representative ones from various parts of the country as well as on various classes of patients.

In the following we give brief excerpts from these letters, conveying the essence of the matter.

Dr. Frederick Gaertner, Pittsburg, Pa., writes concerning the use of crotalin, as follows:

I am using crotalin on ten patients and I find some improvement. However, I am not through with my clinical tests and observations; will also start them on internal administration.

I am elated over the results I am getting in incipient "intraalveolar tuberculosis."

I am fully convinced that crotalin cures incipient cases of acute intraalveolar tuberculosis; in fact, the results obtained by its use in such cases were decidedly greater and more marked than by the use of tuberculin.

In ulcerative tuberculous conditions of the lungs I can also record marked improvement, especially in cases that had the opportunity of securing open-air conditions.

From Dr. F. W. Hammond, Lawton, Oklahoma, we received this report:

I had an old asthmatic under treatment, a man of about forty-five who had been asthmatic for years. Came from the Dakotas and consulted me on account of some polypi in both nasal cavities. After some unsuccessful local and general treatment I gave him three injections of crotalin at four- and five-day intervals, the first injection being 1-100 grain. It made the arm very painful and sore for a day or two each time and there was some swelling. There was no relief at all that I could see. The man quit coming and I have not seen him since.

Dr. G. R. Pogue, Greeley, Colorado, wrote, some months ago, that he was not yet in a position to give an opinion of any value in regard to crotalin, but said:

I certainly do get a decided temporary relief following an injection, but so far have been unable to work out the action. The reaction following 1-200 grain is always very severe, too much so for continued use, therefor I reduced the dose to 1-1000 grain, and while the reaction is less, I believe the results are just as good as with the larger dose.

A few days ago Dr. Pogue added to the above report the following:

Two cases in the early stage of tuberculosis failed to show any improvement after thirty days' treatment. These same cases have made rapid improvement under "tubercle vaccine," with none of the drawbacks of reaction. I might sum up the subject in a few words: My experience with crotalin in the treatment of tuberculosis and associated infections has not been satisfactory.

This report is from Dr. G. H. Grey, Grafton, Nebraska:

I gave my patient (a man with tuberculosis involving the lung to cavity formation and the larynx until he suffered so that he repeatedly told me he would rather starve than try to swallow) 1-200 grain of crotalin as the initial dose, and followed this with 1-400 grain each day for a period of ten days. The drug gave a marked local reaction in the forearm of the right side, i. e., the side first used. I had no trouble on the left, although he complained of tenderness at all times and a sharp stinging pain immediately following each injection, which, however, was greatly and immediately relieved by massage for five minutes at the site of the injection.

The fever improved from the second day and the throat from the first, so that on the third day he was able to eat a full day's ration, including a "square meal," and this with little pain. At the end of the first week every improvement came to a standstill, and, without any special change, he died of hemorrhage of the lung on the tenth day.

This patient had seemed to gain in strength for the first week, but whether it was due to the medicine, directly, or to the extra food eaten, I could not determine. I think it due to the food which, I think, he was able to eat because of the crotalin taken. This, of course, makes the drug responsible, too, for without it, I am convinced, the patient would have died of starvation soon, for at that time, he had eaten nothing for two days.

Dr. E. N. Hawley, Norwalk, Ohio, cannot say that his experience has been at all satisfactory. He writes:

Case 1. Female, 60 years, neurasthenic, cardiac disturbances (nervous), insomnia, multiple neuralgia, general weakness. Crotalin was exhibited in doses of 1-400 grain at intervals of two days. Number of treatments, six. No improvement. Patient discontinued treatment on account of the pain caused.

Case 2. Female, age 50, neurasthenia, nervous cough and asthma, cardiac palpitation,

insomnia. Treatment: Crotalin, grain 1-400, two doses at intervals of two days. Then 1-200 grain at like intervals. Two weeks' treatment showed marked improvement.

Wine of digitalis, and sodium bromide were also exhibited during the treatment with crotalin. Insomnia, palpitation, asthma, cough, all improved. Crotalin was withdrawn after two weeks' use, digitalis and sodium bromide being continued. Patient complains bitterly of soreness of arm caused by crotalin.

Case 3. Female, age 42, neurasthenic, insomnia, nervous cough and asthma, right-lung pleura adherent over surface above which scirrhosis breast was removed one year or more ago. Multiple neuritis. Eight treatments with 1-200 grain crotalin at intervals of two to four days. Vibrator to spinal column. Some improvement (not marked), cough and asthma no better. Patient objects to treatments on account of the pain.

Case 4. Female, age 40, neurasthenia, insomnia, multiple neuritis, weak, anemic. Four treatments with crotalin, 1-200 grain. No improvement. Patient refuses further treatment on account of suffering caused.

Case 5. Female, age 30, height 5 feet 5 inches, weight 115 pounds, bronchitis with bronchial asthma and severe cough. Eight treatments with 1-200 grain crotalin, at intervals of two days. Patient improved. Coughs much less, asthma appears only at intervals of eight and ten hours and remains only one or two hours. General feeling better. Ceased treatment on account of pain.

Case 6. Male, aged 21, tuberculous lungs and cervical glands. Temperature 101° F. mornings, 103° evenings; pulse 110 to 120. Cough and expectoration. Confined to bed, appetite lost, weak and anemic.

Treatment: Crotalin, 1-200 grain at intervals of two days, inhalations of oxygen passed through eucalyptus and pine-needle oil, equal parts. Forced feeding, fresh air, elimination. For cough, sedative and expectorants. Under treatment ten days and still continuing. Temperature reduced two degrees, both morning and evening; appetite improving, general condition improving.

These are all the cases treated so far. Not a typical crotalin-case among them except the fifth and sixth. There is much complaint of the pain produced, and this is a serious feature of the treatment.

Dr. J. A. S. Howell, Elgin, Illinois, reports as follows:

I have used crotalin in two cases, one of tabes and one of pulmonary tuberculosis. I started with 1-200 grain hypodermically, twice each week, and increased to 1-100 grain, at which point I had to discontinue for the time being, as the local reaction was too great. I believe the dose should be decreased as soon as any local reaction occurs, and 1-200 grain will be found all that a weakened patient will stand. In the tabes-case the pains disappeared and walking rapidly improved. Now, at the end of two months, since the commencement of treatment, the pains are beginning to return but the general condition and the walking remains much improved. The patient is a woman and refuses more injections. I have been giving 1-200 grain twice a week by mouth, but can not see that I get any effect. This patient was also on chromium sulphate, 40 grains daily.

My case of tuberculosis ran to 100° and 101.6° F., most of the time. Glands of neck also involved. Put her on glycerophosphites, and ordered guaiacol applications to the glands—cleaned out the crypts of the massive tonsils with phenol (on probe), and started with 1-200 grain crotalin hypodermically. The patient has gained strength and six to eight pounds in weight, and the temperature is dropping steadily, being 99° F. on September 23, in the evening. Had the same trouble with local irritation on running the dose up to 1-100 grain, and 1-150 grain was all this patient could bear. Have been well pleased with the results, but would suggest the 1-200 grain dose two or three times each week until it shows failure to work; only then increase it. I shall continue to experiment with this preparation.

Dr. J. J. Deertz, Northville, South Dakota, reports as follows:

I got some crotalin tablets about two or three weeks ago to use on an asthmatic patient and have had good success with them. They stopped the cough completely and relieved the dyspnea thoroughly. I directed the patient to come in once a week for the injections, but found that the effects lasted only about five or six days, so I have to administer the remedy that much oftener. The first injection was quite painful and caused considerable swelling, but the second, and the third, which I have just given, are not so severe; the first one scared me somewhat, but it is coming out all right. It left a hard lump at the site of the injection for nearly two weeks. Shall know more about it later.

Dr. Lewis H. Brown, Purdy's Station, New York, reports his experience in two cases:

I have had only two patients who would try crotalin injections; both males, one aged 29, and the other aged 45 years, both undoubted victims of tuberculosis. Each has a cavity in the left lung, each has typical exacerbations of temperature, with chills, extension of rales over fresh lung-tissue, and marked rise of temperature during these subacute attacks. At all times in both these cases there is a rapid pulse, temperature not going higher than 99.4° F. each day, except during exacerbation.

Case 1. Mr. B., aged 45, has had frequent hemorrhages, is always ailing, asthmatic,

coughs and raises continuously, has chronic catarrh, poor sleep, bad appetite, both lungs affected (left one most), cavity in left lung, no marked sweating, occasional chills, slight daily rises of temperature, very nervous, anxious to work and struggles on working, keeping books. Spent two years in Colorado for his health, returned no better eighteen months ago; has tried everything and has no faith in anything, but is willing to try.

Case 2. Mr. K., aged 29, cavity in left lung, marked evidence of trouble in apices of both lungs, frequent subacute attacks, occasional night-sweats, very nervous, but generally sleeps well, has never had a hemorrhage. Has been very weak, not fit for any effort, though willing enough, has been losing health for two and a half years, has known that he is consumptive for over eighteen months.

I have attended both these cases for more than a year, and I know them well. I have tried all the usual and many unusual things with them, with ups and downs, mostly downs, till I persuaded them to let me try crotalin.

I began on September 28, 1909, with hypodermic injections of crotalin, 1-200 grain, on posterior surface of forearm with very marked and distressing local reaction, but both patients managed with some effort to keep at their work. I continued the administration of 1-200 grain twice a week till the ninth of October, when I increased to 1-100 grain twice a week; again on the 21st of October I increased to 1-66 grain. This dose I have continued.

At each successive injection I got less and less local reaction. I attribute some of this result to injecting fairly deeply after the first two or three injections, but I got apparently no other effect whatever till I increased to 1-100 grain (on October 9th).

In Mr. B's case (he is, if anything, the worse of the two) there was a general improvement in strength, in appetite and sleeping, but so little that he almost decided to stop the treatment. So, in desperation, on October 21, I used one of each tablet, 1-200 and 1-100 grain, at the same time (1-66 grain), and have continued this ever since. I cannot find any stethoscopic improvement, but the man thinks he is stronger. However, the very fine weather may be helping him. His friends think he eats and digests better. In this case I cannot say that I see any improvement that could be fairly attributed to the crotalin alone. He is continuing all his other remedies and will continue crotalin, for the present at all events.

If I had had only this one case I should have been discouraged as to crotalin.

Mr. K's case, aged 29, who is practically in the same condition as Mr. B., only perhaps not quite so advanced. I got *no results other than local reaction* from the 1-200 grain. So on October 9 I increased him also to 1-100 grain, giving injections deeper, and in his case, also, I am of the opinion that when the injection is given deeply there is less local reaction. (In both cases I inject in alternate forearms.)

A few days after beginning the 1-100 grain doses in this case improvement began to be marked, but as I was increasing the dose in Mr. B. on the 21st of October, I decided to do so also in this case and on that day I increased to 1-66 grain crotalin, and have given it twice a week ever since. He has less cough, sleeps better, eats better, digests better, has less catarrh, feels and apparently is stronger, is putting on a little flesh, looks better, and has left off most of his medicines. By the stethoscope I cannot find any improvement, but in all other respects there is evidence of improvement. If I had this case only I should feel elated. I am trying to get some other patients let me try it, and if I do I shall report later.

In spite of improvement in Mr. K., I confess I am not oversanguine.

Both my cases are better and one markedly so, but in a long practice I have often found tuberculous patients pick up temporarily on any new treatment.

I think crotalin should certainly be given a trial in every case, and I am trying hard to get some others to use it.

I found no improvement with small doses and very little until I got up to 1-66 grain.

Under a quite recent date Dr. Brown writes:

The two cases detailed above are doing splendidly. Mr. K has dropped practically all remedies except an occasional aperient. Has 1-66 grain injected every eight days; only a few rales can be heard in apex of left lung. Mr. B., if anything, did better than Mr. K., because he was not so far advanced. The cavity is contracting. He also has 1-66 grain every eight days. There is practically no local reaction now. Neither will let me discontinue the treatment because they are so satisfied with the results.

Give big doses; inject deep; and don't get discouraged if immediate results are not secured. In Mr. B.'s case I nearly discontinued because there seemed to be no result. I am glad I did not and so is he.

It is difficult to draw any definite conclusions from the foregoing reports. We have also heard from many other physicians, but the preceding are fairly representative. Certain it is that crotalin is not a specific remedy, though it is undoubtedly of benefit in some instances. It appears to produce a certain tissue reaction and to have a beneficial influence on the cough. The pain which it causes is a serious bar to its gen-

eral use. It is our impression that the remedy does not have so favorable an influence as has nuclein, which is a physiologic remedy in a marked degree. One fact is very evident, namely, that not any remedy which we may use in tuberculosis can influence the disease condition favorably unless all factors connected with the general management of consumptives are carefully considered, and unless the patients submit unconditionally to the dictates and regulations of the physician.

LABORATORY INVESTIGATION OF CROUP

We are making an investigation of the bacteriology of croup. If any reader of CLINICAL MEDICINE has cases of this kind, whether diphtheritic or not (preferably not) we shall appreciate it very much if he will send us swabbings from the throat for examination. These may be obtained with clean absorbent cotton, which immediately after the sample is obtained should be placed in a wide-mouthed bottle (which has been sterilized by boiling) and carefully corked. We will furnish culture outfits on request.

Your hearty cooperation is invited. We feel sure that out of this investigation there will come information of value to all of us.

THE PROCTOLOGIC SOCIETY AND OTHER ST. LOUIS EVENTS

Among the other societies which meet in St. Louis at the same time as does the American Medical Association, is the American Proctologic Society, which foregathers at the Planters Hotel, June 6th and 7th. We have seen the program and it is a mighty good one, containing the names of such well-known specialists as Pennington, Gant, Tuttle, Mathews, Martin, Jelks, Cook and Adler. Any of our doctor friends who are in attendance upon the great medical round-up of the year, as many will be, should drop in at this meeting, that is if they are interested in rectal diseases.

By the way, we hope to have the pleasure of meeting many readers of CLINICAL MEDICINE in St. Louis this year. Drop in and see us at the Exhibit Hall, where some of us hope to have the pleasure of entertaining friends. Incidentally, I might say that we are going out on the Chicago & Alton from Chicago, and hope to meet some of our friends *en route*. If we can be of service to any one in securing sleeping-car service, or otherwise, just let us know by letter, telephone or in any other way. We are yours to command.

WHAT LED HIM TO ALKALOIDAL THERAPY

While sitting by the big pine fire, ten miles from home, "waiting" and enjoying a copy of CLINICAL MEDICINE for January, a constant companion in these circumstances, I was impressed with the article by Dr. Waugh on "Therapeutic Progress."

I have been gradually drifting, or more properly, forced into the use of the alkaloids in my desire to get results. Many times have I diagnosed my cases, given the remedies indicated and my next visit found no signs of the drug-effects I had been taught to expect. These observations, together with the experiences given by my fellow doctors using the combination of 10-drop doses each of tincture of aconite, digitalis and gelsemium, given constantly for two or three weeks, with an occasional acetanilid compound tablet, in cases of continued fever, convinced me that these remedies could not be relied upon.

Reading THE CLINIC years ago, and noting the results, turned me to the alkaloids, I tried aconitine, defervescent compound and dosimetric trinity. While finding it very hard to get the people to understand the results desired, I now

definitely know what to expect at my next visit. I can *see* the results of the little granules. This modern medication has brought great satisfaction to me in my daily work.

In regard to the use of calomel in our south land, I find the calomel users here, taking as they do 8 to 20 grains often repeated, a lot of sallow, complaining patients, with indigestion. They are frequent visitors to my office. I think we depend too little on podophyllin and other hepatic stimulants.

In this part of Alabama we find hookworm disease very prevalent. I should like to report a little later on several cases now under observation.

P. I. HOPKINS.

Clanton, Ala.

[The same thing which led Dr. Hopkins to alkaloidal therapeutics has influenced thousands of others. The results produced by the little granules are real, not fancied, as the discriminating man soon learns.

The doctor is right about the calomel. There are few more useful remedies, but it should not be abused. We hope to have the reports of those hookworm cases. May we not have some photographs of patients, to be used with them?—ED.]

CHILDBIRTH AFTER SIXTY

On page 330, March number of CLINICAL MEDICINE, I note a case of pregnancy reported by Dr. B. F. Archer, Sweetwater, Texas, "five years after the climacteric had been established." Also another case where a woman became pregnant after she was 70, quoted from *Journal de Medicine de Paris,* Nov. 26, 1881.

As the request follows for similar cases to be reported, I will give you the case of Mrs. Thomas Tanday, of Todd Co., Kentucky, three miles from the birthplace of Jefferson Davis (Fairound), one mile from my father's home. I was a frequent visitor in this family, and I was then (in the early fifties) "on my first legs," and their youngest children were twins (Misses Lou and Mandy) were like myself, "sweet sixteen" and sweethearts too.

But soon, I well remember, there was a great sensation in the neighborhood, and it was "all the talk" of the regions round about, for my contemplated mother-in-law brought forth a fine boy, "*after she was past* 60." Dr E. T. Stewart of Fairound, now 80 years of age, and possibly a very few survivors in that section, could vouch for the correctness of this remarkable incident, if need be.

F. B. MOODIE

Lake City, Fla.

CHILDBIRTH AT THE AGE OF TEN

From one extreme we go to another. A few weeks ago (in April) the Chicago newspapers printed reports of the birth of a child to a child-mother, a negress, at the Cook County Hospital. The story, as it appeared in the *Chicago Journal,* was as follows:

10-YEAR-OLD GIRL IS YOUNGEST MOTHER IN U. S., PHYSICIANS SAY.

CASE OF ANNE EPPS, VISITED BY STORK SUNDAY, AMAZES DOCTORS—HER MOTHER GRANDPARENT AT 23.

The youngest mother who ever came under the notice of the officials of the county hospital, and perhaps the youngest in the history of the medical profession in the United States, is Anne Epps, the 10-year-old colored girl, who on Saturday gave birth to a 6¼-pound child. The baby's maternal grandmother is Mrs. Minnie Kendricks, 319 West Fifty-second St., who is herself only 23 years of age.

According to Charles A. Happel, warden of the county hospital, many cases are recorded of girls who have become mothers at the age of 12 years, but this is the first instance on record in Cook County where a child of ten has been visited by the stork.

Mrs. Kendricks, Anne's mother, was only 13 years of age when Anne was born, and this, physicians say, probably had a great effect on the early maturity of her daughter.

Anne was brought to the county hospital on January 27 by officers of the Juvenile court,

and steadfastly refuses to tell the name of the father of her child.

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[This record had been beaten already. In the June, 1908, number of CLINICAL MEDICINE, page 798, Dr. V. I. Pittmann, of Cederetta, Mississippi, reported a case of childbirth, occurring in a colored child 9 years and 24 days old. The child-mother was only 37½ inches high and weighed 75 pounds. The baby weighed 7 pounds. So far as we can ascertain this is the record for this country.—ED.]

PALMER WROTE IT

Of course, we ought to have known it all the time. That is, that our free-lance, *yet* poetical friend, Dr. George Thomas Palmer, of Springfield, Ill., was the author of that poem, "Discussing the Meeting," which we published in April CLINICAL MEDICINE, page 442. Who else has the knack of saying such witty things and saying them so well? We refuse to accept responsibility for the hiding of the authorship of this poem. We borrowed it from some fellow, and the other fellow borrowed it from Palmer, and now the goods are restored to their proper owner.

PUERPERAL INFECTION WITH A GONORRHEAL HISTORY

Having been a member of your family for the past twelve years and seldom breaking into print, I am going to ask you for information. Within the past year I have had three cases of puerperal fever, or sapremia, where there was a previous history of gonorrhea. In all cases every aseptic precaution was taken and in the last case the baby was born before any examination could be made. All three cases recovered under proper treatment.

I would like to know the experience of other members of the family, and if there are any prophylactic measures one could adopt that would lessen the number of these cases. I have tried vaginal douches of various antiseptics without results. Saturation of patient with veratrine and echinacea seems to shorten the course of the fever, or perhaps it is the local measures resorted to.

G. W. HENIKA.

Readstown, Wis.

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[Here is an opportunity for members of the family to give substantial help. Let us have a few brief chapters of personal experience. The first thing to do, in such a case, is to establish the diagnosis. If the mother is seen before delivery, samples of the vaginal secretions should be examined miscroscopically, and if the gonococcus is found the vagina should be swabbed out with a silver nitrate or argyrol solution of medium strength. After infection has occurred vaginal douches as a rule do little or no good, but thorough antiseptic irrigation of the uterine cavity almost invariably yields immediate results as shown by the drop in the temperature, provided there is no streptococcic infection. In addition to this measure, of course, the patient should be thoroughly cleaned out with calomel, podophyllin, etc., followed by saline laxative, and the bowels rendered aseptic with the sulphocarbolates. This measure alone will often cause a temperature to subside in a remarkable way. This being done, it is our custom to saturate the patient thoroughtly with calcium sulphide and echinacea.—ED.]

TWELVE CASES OF VERSION OR TURNING

In an obstetric experience of fourteen years and taking in about 300 cases I have had occasion to practise version on account of transverse presentations twelve times. In ten of these cases I have done internal or podalic version by bringing down a foot. In two cases,

where the waters had not drained off, I was able to turn the child by external version alone.

In my first case I was called to a woman who had been many hours in labor, the waters had long been drained off and the uterus was firmly contracted around the child, which had evidently been dead some time. I was obliged to call in another doctor to assist me and by our combined efforts we succeeded in turning and delivering the child. The mother made a good recovery after having a sharp attack of peritonitis, probably caused by traumatism.

The next case was almost identically similar, but I did not call an assistant this time. I worked from 1 p. m. till 6 p. m.—worked until I had not a dry thread on my body, but I turned that child myself and delivered it without injury to the mother. The child was dead, of course, but the mother made an excellent recovery and did not develop any complication of any kind. I am happy to say that I have never had another case as hard as this one.

In three instances I had to turn the latest-born child of a pair of twins. It has seemed to me that the youngsters tumbled out of their proper positions through having too much room in the womb after their mates were born.

I had always considered external version performed without assistance as next to impossible, but by experience in two cases I find that if the child is small and the bag of waters large it is entirely practicable. In cases where a midwife is confronted with a transverse presentation she is very likely to try to deliver by pulling on the arm, which is the reason Emperor William of Germany has to carry a paralyzed left arm through life.

WM. M. GREGORY.

Berea, O.

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[What say other readers of CLINICAL MEDICINE as to the use of performing and the practicability of external version? A few short "remarks" on this subject will be acceptable.—ED.]

SOME OBSTETRIC CASES IN WHICH ATROPINE, VERATRINE AND OTHER REMEDIES WERE USED

These cases all occurred in less than eight months of a not very extensive country practice.

March 19, '08—Mrs. B., age 26, primipara, six months pregnant. Health always good. Somewhat constipated for years. I prescribed for this during the early months of her pregnancy. Since that time by eating fruit and laxative foods her bowels have kept in good condition. Has not even had nausea except when taking medicine to move the bowels. Sunday, Mrs. B. had considerable pain in the lower abdomen, which she attributed to the bowels as she had had diarrhea since Wednesday, caused she thought, by eating watercress. Pain intermittent and due to uterine action. There was slight headache, no swelling of ankles then or at any time. Left a few "chlorodyne" granules to quiet the bowels. Monday learned by telephone that Mrs. B. rested and was feeling much better. Tuesday about one a. m. was called to come immediately; found that she had rested well Tuesday night until about one o'clock, when she got up to urinate and fell to floor in a convulsion. She was comatose, no edema of any part of the body. Convulsion repeated shortly after my arrival. Gave a hypodermic of H-M-C and veratrine, put the patient in a warm wet pack, and gave two drops of croton oil in a teaspoonful of olive oil on the back of the tongue. Told the husband it was a serious case and asked for counsel. Counsel was delayed several hours and before his arrival patient had another convulsion. Repeated the above medicines.

On arrival Dr. H. endeavored to make a vaginal examination but the patient was so restless when disturbed that he could

do nothing but ascertain the condition of the cervix which seemed somewhat shortened. Endorsing all that I had done and advising a continuance of the treatment Dr. H. left, with the understanding that he be called if there was any necessity for operative interference.

Whenever the patient became restless I repeated the H-M-C and whenever the pulse increased in frequency or tension I gave veratrine hypodermically. There were no more convulsions. Tuesday night patient became very restless, complained that her bowels wanted to move and got up several times without result. I thought it probable that her pain was uterine and told her husband so. About midnight her baby was born. Fetus, placenta and everything came at once. The membranes were found quite intact when I put the product of conception in the basin.

Not until Wednesday afternoon did the patient become conscious. With the exception of an acute bronchitis with most profuse expectoration, Mrs. B's convalescence was all that could be desired.

Case II. Mrs. H., eighth confinement. Pains began between 8 and 9 p. m. I reached patient's home about eleven. Patient was sitting up and flowing quite freely, had flowed so much that "everything got black" and she came near falling. I made her bed ready, got her to bed, washed the vulva with creolin solution, examined and found a placenta previa.

I put a white napkin to the vulva and gave a hypodermic of atropine. Napkin was saturated in very short time. Repeated the atropine in fifteen minutes and continued to do so until the throat became dry. After the second or third injection the bleeding lessened very perceptibly and finally ceased entirely.

Baby was born Friday morning about ten o'clock but lived only about twelve hours. I attributed its death to the antepartum hemorrhage, which I thought severe. The blood had soaked through the patient's clothing and ran at least three feet from her chair and formed a pool on the floor.

Was the cessation of hemorrhage due to the atropine or not? I do not know but I do know that the bleeding ceased after the atropine and at least ten hours before the labor terminated. The only other medication was a half dose of H-M-C to ease the nagging pains and give the patient rest; this after the bleeding ceased. Puerperium normal.

Case III. Mrs. F., fifth labor, last child three years old. First stage long, pains occurring at long intervals. Second stage pains at long intervals and not of much force. Everything normal until just as the placenta was delivered when the patient said, "I am going to faint," which she did.

I gave a hypodermic of atropine, glonoin and strychnine arsenate, a hot-water douche, pulled the pillows from under her head and gave ergot and aromatic spirit of ammonia by the mouth, and all the time the husband or myself made firm pressure over the fundus. Repeated the hypodermic every fifteen minutes for an hour. The patient vomited the ergot and ammonia. Gave two hypodermics as above during the second hour.

Convalescence satisfactory except that the patient was weak and anemic for some time. Had the same experience with this patient in her previous labor. Am hoping she will not have any more babies.

Case IV. An Indian woman. The husband, quite an intelligent man, tells me that his wife was confined about ten days or two weeks ago. After the baby was born something came out, which the old Indian woman put back but it would not stay. His wife was not able to be up and would I go and do something for her?

Of course, I would. After several hours' ride I reached the Indian camp

and found my patient's trouble to be complete inversion of the uterus.

I gave a creolin douche, a hypodermic of H-M-C and went to work. How long I worked I do not know, but I succeeded in restoring the uterus to its normal condition with my good right hand in its interior. Before withwdrawing the hand I gave an intrauterine injection of hot creolin solution. Gave a vaginal douche of same. Gave a dose of atropine and strychnine arsenate by the mouth and left a few doses of these remedies to be given the next day.

The shades of evening were falling as I turned my face homeward, feeling that I had earned the satisfaction that always comes from work well done. The patient had no further trouble. In this case reposition began at the os. I held the inverted uterus in my hand and made firm, steady pressure upward. It was only by bracing my elbow against my knee that I was able to maintain the pressure long enough to overcome the contraction of the cervix, but when it did begin to yield it seemed but a short time before repositoin was complete. How would I have managed this case without H-M-C, as I had no one to help me but the husband?

Case V. Mrs. C. Has had nine or ten children. Was called in the early evening and found that Mrs. C. had been taken suddenly with hemorrhage which had been so profuse that she felt as though she would faint. I found the bleeding still quite free, with regular uterine action. While I was questioning the patient she became very pale and said, "I am going to faint." I gave a granule each atropine and glonoin by the mouth. She vomited not long after and then again became faint from loss of blood.

I gave atropine and strychnine arsenate hypodermically and repeated every fifteen minutes until the throat became dry. No further hemorrhage, pains continued until about three a. m. when the fetus was expelled into the vagina. No further trouble.

E. Cook.

Sheridan, Nev.

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[This is an exceedingly important paper. If atropine stops the hemorrhage of placenta previa the fact should be known to every practician. If veratrine stops puerperal convulsions, it must be utilized. These are not matters of choice but of duty.—Ed.]

JUST AS GOOD

I depend upon alkaloidal therapy for quick results. Got out of calcidin, and a runner came around and I ordered "some just as good." The test came soon and I got no resuts and came near losing a case before I realized the fault and got busy. Don't let me miss a number of The American Journal of Clinical Medicine. It is a big help to me.

J. E. Guernsey.

Olin, Ia.

THE NEW YORK STATE HOSPITAL FOR CRIPPLED AND DEFORMED CHILDREN

The New York State Hospital for the Care of Crippled and Deformed Children, the ninth annual "Report" of which lies before us, is to a great extent a recognized center, within a radius of many miles, for the treatment of deformities. Patients, always of the poorer classes, (none other being received) are seen and treated in the outdoor clinic.

In the wards of the hospital 197 patients have been treatd in the nine years of its existence, who remained in the institution an average of one year, seven months and twenty-seven days. About one-half of the deformities treated are tuberculous in nature, and the patients so afflicted are kept in an outdoor shack under the constant supervision of a special nurse.

It is a splendid showing that in the entire nine years there have been no deaths from the acute diseases of childhood among the inmates, and that only three deaths from chronic disease have occurred. An institution which can hold its little patients for such long periods of time is bound to show good results, which are proportionate to the number of patients it can accommodate. The New York State Hospital for the Care of Crippled and Deformed Children is doing a great work and deserves all the support we can give it.

ON THE CAUSES OF FEVER DURING THE PUERPERIUM

Alfred Schmidt (*Arch. f. Gym.* 1909, No. 1, through *Münch. Med. Woch.* 1910, No. 5, has found, in the Women's Clinic in Halle, hemolytic streptococci in 7 per cent of pregnant, and in 68 per cent of lying-in women. Fever in the puerperium can also be caused by other microorganisms, and is so caused as often as by the hemolytic streptococci. An autoinfection by nonvirulent hemolytic cocci which were present *ante partum* is improbable, and virulent cocci were never found before confinement. Gonorrheal fever always depends upon an autoinfection, and septic fever is in most cases so caused. A virulent infection can only then occur if at the moment when a wound is produced virulent germs are present at the place.

By the way, this is contradictory. If virulent germs were never found *ante partum,* how can they be present at the moment when the wound is made?

THE TOXICITY OF MAGNESIUM SULPHATE

I must take exception to your statement, page 445, April CLINICAL MEDICINE, that magnesium sulphate is not toxic when given by the mouth. Several years ago, when serving as an interne, I was led to look up the toxicity of magnesium sulphate, after observing an unfortunate occurrence at the hospital. Three cases of poisoning by epsom salt occurred within a few days, produced by large doses administered as enemas. One death resulted and another was barely escaped by prompt action. A brief report of the three cases personally observed follows:

Case I. Mrs. A., age about 23 years, following a clean laparotomy, and recovery from anesthetic, was ordered an enema of magnesium sulphate, oz. 1, water, 1 pint, this to be repeated in four hours. The nurse misread the order and gave 4 ounces of the salt in the enema at 9 p. m. This was retained but a few moments and was followed by smarting and irritation in the rectum. At 1 a. m. the enema was repeated, and this time it was not expelled. The patient complained of the rectal irritation, but otherwise was comfortable. Shortly after the administration of the second enema, the patient complained of thirst, and the nurse left the room to procure fresh water. Upon her return the patient was found unconscious, extremely relaxed, cyanotic, respiration barely apparent. I was called at once. Before I could arrive at the room, less than five minutes, the patient had expired. The body was cyanotic, pupils widely dilated. We were at a loss to account for the death at this time.

Case II. Mrs. B., age about 40 years, operation same day as Case I. Enemas ordered at the same time, to be given in the same manner, by the same nurse. Shortly after 9 p. m. she received 4 ounces of magnesium sulphate in an enema. This was expelled after a few moments. At 3 a. m. the enema was repeated and retained. At 3:30 a. m. I was again called in a hurry and found this patient in almost the same condition as the first—body completely relaxed, cyanotic, pupils markedly dilated, respiration almost absent, pulse

fairly good. At once I began artificial respiration and continued it for three hours. Enemas of strong, hot, black coffee were administered, also heat and brisk massage of the limbs. Patient recovered.

Case III. Mrs. C. a few days after the previous cases occurred was given magnesium-sulphate enemas, each containing one ounce, as follows: Enema at 2 p. m. retained, another at 6 p. m. retained, others at 10 p. m., 2 a. m. and 6 a. m. expelled. Shortly after 6 a. m. patient became quite irritable. At 7:30 a. m. she was found to be stupid, body relaxed, pupils widely dilated, slight cyanosis, respirations very shallow, and pronounced anesthesia; could move limbs with difficulty; could be partially aroused. No thirst and no purging present. She was given plain water enemas, four of which had to be recovered through rectal tube, also passive exercise, and massage of limbs. Recovery in a few hours.

Upon referring to the literature upon the subject I have found that doses of two ounces by the mouth have been reported to have produced death in children and debilitated persons. Our salt was analyzed and found to be all right. I still use magnesium sulphate, both internally and externally, but am careful to see that an overdose is not administered by the rectum and retained.

JAMES C. FERGUSON.

St. Paul, Minn.

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[It may be that the untoward symptoms in these three cases were all ascribable to the magnesium sulphate, but from the evidence submitted we must say, *"non demonstrandum."* In the first two cases, both directly following severe surgical operations, the possibility of post-operative complications is not excluded. We do not know the nature of Case III, so cannot make deductions. We do know, however, that magnesium sulphate, in concentrated solution, is absorbed very slowly, the tendency being for the fluid of the blood to escape into the bowel, the osmotic current in the opposite direction being so weak as to be practically negligible, less marked, in fact, than with a dilute solution. (See Cushny.) The likelihood of sudden death from magnesium poisoning, as in Case I, seems exceedingly remote. The number of cases of magnesium sulphate poisoning reported (when the salt is introduced into the digestive tract) is small, exceedingly small, two only being recorded by Wood, and even these may admit of question.

Dr. Ferguson's cases may be all true magnesium poisoning. We certainly shall not deny the possibility. It undoubtedly is the part of wisdom to exercise due caution, to avoid enormous dosage and if the remedy is not promptly expelled, to use the tube.—ED.]

JOURNAL OF PHYSIOLOGICAL THERAPEUTICS

A month or two ago we called attention to the early appearance of *The American Journal of Physiological Therapeutics,* which has just been floated by our good friend Harrower. It makes good its promises. It is indeed bright, energetic and bubbling over with enthusiasm, and in every way worthy of its brilliant owner and editor. It is published bi-monthly. Price, $1.00 a year.

We have just learned, however, that there is another *Journal of Physiological Therapeutics,* published in Philadelphia and edited by Dr. Louis von Cotzhausen, who will be remembered by readers of the CLINIC as an occasional contributor in years gone by. While we are not very familiar with this publication, knowing the doctor, we know the journal itself must be good. It is unfortunate that these two publications bear so nearly the same name, but we advise anyone interested in the subject to take them both.

In that way the embarrassment of riches may become a gold-mine of knowledge. Send a dollar to Dr. von Cotzhausen, 1711 Green St., Philadelphia.

GONORRHEA NO PROTECTION

In the February number of CLINICAL MEDICINE somebody was quoted as saying he felt sure that a person who had had gonorrhea would not contract syphilis. I beg to say that I have seen several cases where men had contracted both diseases at the same time, a great many more where syphilis followed gonorrhea and numerous instances where syphilis preceded gonorrhea. Of the syphilitics I have treated, I think fully half of them had previously had gonorrhea. I account for the last-named condition in this way: neither disease immunizes against the other and gonorrhea is far more prevalent than syphilis.

S. H. SNOW.

Dalhart, Tex.

TIC DOULOUREUX—TRIFACIAL NEURALGIA

My latest experience with that distressing malady, tis douloureux, has been so favorable that I feel impelled to tell the story in CLINICAL MEDICINE, though I have but two cases to report.

Case I. Male, age 58, stockman by occupation, came to me for resection of nerve, having received no benefit from medicine and having about gone the rounds of the medical men of his locality. I had just made a couple of nerve resections for facial neuralgia and did not score a very brilliant success in either. I had also just received my new alkaloidal case and had been studying its "potentialities," so persuaded him to try medical treatment once more, which he consented to do. First, I provided for thorough elimination, then gave one granule each of hyoscyamine amorphous, gr. 1-250, and strychnine nitrate, gr. 1-67, every four hours. This promptly relieved the paroxysms of pain and though this was more than two years ago, he has only had to send once each winter for more of those little pills, the relief being so prompt and complete that he no longer considers the possibility of an operation.

Case II. Female, age about 30. Had had all of her teeth extracted and had received no benefit from that, so her physician had told her she would have to go to the hospital and have the gasserian ganglion removed. I placed her on the same treatment as given in Case I and ordered her to report results, which she did in six weeks, saying the pain was relieved. I gave more medicine and told her to let me hear from her if the pain returned. This was one year ago and I have heard no complaint, so suppose everything is satisfactory.

I have tried hypodermic injections of atropine in the region of the nerve, but without much success. There seems to be something in the action of the hyoscyamine that "knocks the eye out" of the nerve pain every time.

E. D. THURSTON.

Burwell, Nebraska.

[Isn't it time we had a whole chapter of experiences relative to the treatment of neuralgia?—ED.]

EXOPHTHALMIC GOITER

I wish to present for your consideration and advice the following case:

Woman, age 35, weight 135 pounds, native-born, light-complexion, well developed, given birth to four children, youngest about five years of age. Family history negative. She first noticed an enlargement of the thyroid gland about five years ago, but it seems that no symptoms that might be referred to it were noticed until about one and one-half years ago. From her description of symptoms, I should judge that all the cardinal symptoms of Graves' disease

have been present for at least a year. She says that about four or five years ago a physician told her that she had tuberculosis and, that as recently as six months ago her spleen was enlarged, although this seems to be normal in size, at present.

She has had, at irregular intervals for the last year, attacks of abdominal pain, with nausea and vomiting, the pain being located at various points in the abdomen. These attacks lasted from one day to a week, when she would get better and feel as well as before. The menstrual periods are regular, the flow lasting five or six days. She complains of frequent headaches, principally frontal, which may, however, extend to the occiput, lasting from one to three days, and which seems not to be relieved very much by any drugs. Malaise, vertigo, palpitation, anorexia, and diarrhea are also comlained of. Pressure symptoms are slight.

The patient has lost little if any weight. The enlarged gland extends from just under the clavicle on the right side about two and one-half inches upward and about one and one-half inches on the left side, occupying one-third of the circumference of the neck; it is neither hard nor soft, but firm in consistence. The eyes show a moderately well-developed staring expression. Tremor is pronounced. The temperature at this examination, which was during one of the gastrointestinal attacks, was 99.4° F.; pulse, 120, regular and full; no heart lesion discernable; there was visible abdominal pulsation along the course of the aorta. The urine shows a small amount of albumin, but is otherwise normal.

This is about as clear as I am capable of presenting the case. Altogether, it seems to be a typical case of exophthalmic goiter. I have been practising only about two years and have never personally treated this malady. I have a fairly complete library, and have looked up the subject of goiter, but do not find anything very definite, either in the books or recent literature, that gives me much positive encouragement as to its medicinal treatment.

H. D. RYMAN.

Vernon, Ill.

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[This is undoubtedly a case of exophthalmic goiter of the sthenic type. It is due to the continued presence in the blood of any poisonous substance, the toxins of various germs, toxic wastes such as those that accumulate during fatigue, digestive autotoxins, etc.

Sajous ("Internal Secretions", Phila., Vol. 2, 1907, page 1861) advises "measures to reduce the sensitiveness of the test-organ: the bromides or veratrum viride, and if the case be due to intestinal autointoxication, frequent saline purgation and the avoidance of meat." The most important point is the probablity of autointoxication, which must be remedied according to the slogan "Clean out, clean up and keep clean." The iodine, which according to Sajous, is also indicated, is best supplied in the form of calx iodata, because you need not fear any iodism following its use. The diet and its assimilation must be carefully watched, and the heart must be guarded against overwork. Another remedy, recently recommended, and which has given really remarkable results in some cases, is chromium sulphate. The dose is 4 to 8 grains three times a day.

These are likely to be anxious cases and may make the doctor sweat blood. Watch the case closely, Doctor, and report again.—ED.]

THE DISPENSING DOCTOR AGAIN

I had made up my mind never to say anything more anent the practice of medicine and did not think that I ever might have something to say regarding the practice of pharmacy, but a man's mind is liable to change when the environment seems to demand it. So this

is the excuse for my appearance once again to speak my piece. I am getting to be an old-timer and from my feelings, sometimes, I begin to think that it is time for the old worn horse to be turned out for an extended rest or possibly to let him die a natural death, from starvation or some other lingering mode,—at least that is what most of them get for their devoted and life-long service. But I am degressing and did not start out to write about a horse at all; but, to tell the the truth, I am pretty huffy, if not really mad, indeed too mad even to cuss. And it all comes about in this way.

I am past three score years, have been in the medical harness, pulling right up close in the collar, since June, 1877, when I parted from my alma mater, together with a number of others, all of us seeking renown and lucre by following in the footsteps of Esculapius. I for one, of that little band of young men and ladies (and when I say ladies, I mean it in the full sense of the word) am not ashamed of my dear alma mater. Although she was but a small creature and had few advantages, she was a power within herself, and when she reached for an object it was, as a general thing, taken in. Our professors were rustlers from the word go, and none of them ever tried to shirk a duty. Big, wholesouled fellows, ever ready to do an act of kindness to their poor suffering fellow creatures, they were, and you may rest assured that we, as their pupils, were treated as their own flesh and blood—right.

If perchance any of them are still among the living and this should attract their attention, I trust that it may induce them, one and all, to send me a note informing me where they live and how they are passing their declining years. But I am degressing again, and possibly it is well I have done so, for this little eulogy of my alma mater and tutors of years gone by has modified my temper so that I feel like saying something sweet, or at least, it has moderated to a great extent the temper that was in me when beginning to write.

I obtained my education, what little I have, both academic and medical, within the walls of Willamette University of Salem, Oregon. The literary course was short and uneventful, and so too was that in medicine, and probably many of you who happen to be following this rambling harangue will ask, "What in the name of Jehovah is the old medico trying to get at?" Some of you will vote him a crank and throw the paper down, and think no more about it. But please, Brothers, don't do it, for I will get there in the sweet by-and-by, in fact I am there now.

It is apparent that for the past few years there is a great hue and cry from certain pharmaceutists in regard to the dispensing doctor. My vocation is now, and has been since leaving the place in which I obtained my little knowledge, that of physician and pharmaceutist, practising the one as much as the other, and together and at the same time, having always carried my own medicines, building up my own prescriptions and compounding the same. I cannot say whether it is a common thing for doctors and druggists to be educated together or not, but I do know that this was the case in our school, for those who were taking a Ph.G. course sat along-side of those who were taking the M. D. course, heard the same lectures, attended the self-same quizzes, and recited the same lessons, in so far as the Ph. G. went. Then we, of the M. D. class buckled on our armor and went, farther along. When the final examinations came, the candidates for the Ph. G. degree filed into the same room as the candidates for the M. D. degree; the same questions were placed before us, up to a certain point; we all were required to write; then the candidates for Ph. G. retired, while those for M. D. remained to continue their task for the doctor-title. Now, will some kind and know-

ing person rise up and tell me just why I am not just as capable of practising pharmacy as the chap who learned his pharmacy in the same class and school, or under similar condition? And I wish that kind friend to be able to prove it, aside from merely saying it. You did not devote as much time to the study of pharmacy as the other fellow, and yet I had to pass the examination and make as good a showing as he, if not better.

In my vocation, or rather vocations, I take several journals, pharmaceutical as well as medical, and it is my endeavor to scan them pretty closely for the meat they may contain. It so happened that a few days ago a certain pharmaceutical journal, new to me, came into my hands. Although, as I perceive, it is in its 46th year of publication, I never happened to see a copy of it before, but from the way it tore into poor me, I care little if it ever comes this way again. This particular journal is published by the O. D. Haynes Company, at 90 William St. New York City, and is the issue of the 21st of October, 1909. The particular objectionable article purports to be a selection from an address by President Carter, of the National Wholesale Druggists' Association, and it says that the dispensing doctor is a menace to the public health.

Ye Gods! what are we poor doctors coming too? We can figure out the exact dose that is required to accomplish a certain end, and transcribe the same on a piece of paper and hand or have it handed to the all-wise Ph. G. so that it can be properly compounded and sent out to the doctor's patient. I, for one, cannot conceive of any legitimate reason why the wholesale druggist should be making a kick, for it is his place to sell to the retailer, and the retailer is the fellow that tends or makes an effort to cater to the M. D's., and if anybody has a right to register a kick it certainly is the retailer. And the indications to me are that the tendency of the times is to crowd out the retailer, both by the doctors and wholesale druggists. Many physicians are now patronizing the jobber. Some even go straight to the manufacturer, not only for standardized goods, as enumerated in the U. S. P. and N. F., but they keep abreast of the times and buy from the various manufacturers who put out not only something just as good but, in our opinion, far superior. The doctors who prescribe the products of the druggists, are the *ladies*, and it is my humble opinion that there is now, and always will be plenty for the pharmacists to do if they will stick to the manufacturing of reliable goods.

As I remarked above, if there is any kick coming against the physician, it certainly should come from the retailer. It is true, that the dispensing doctor will knock out a great many small dealers located in the smaller towns and villages, but in the more thickly populated districts there will still be a goodly call for the lesser dealer.

Now for a few words in defense of the dispensing doctor. The latter generally is located in an out-of-the-way, small borough or village, and sometimes out in the country, at some cross-roads. There is no pharmacy in his neighborhood, the nearest one being perhaps, many miles distant. The doctor is called hastily, sometimes in the middle of the night, to go to the relief of one in distress. Hastily he arranges his armamentarium and darts out into the dense darkness, and after numerous adventures, arrives at his destination. He finds the darling little one, or perchance the father or mother, in a state of collapse (I have been in that situation more times than once), and something must be done, and that P. D. Q., or that poor soul will be out of its earthly shell and gone to sport with the angels of one or the other regions of which you and I have heard preached from the pulpit so often in our childhood days.

But the dispensing doctor is there; it does not take him long to realize the condition. He opens his ever-ready hand-satchel, maybe by the flickering rays of one of those tallow dips that grandma used to make, or probably nothing more than one of those contraptions for which we wild westerners had a most irreverent name, this thing consisting of some kind of a vessel that will hold a little melted tallow or lard and a rag stuck in and lighted. But our hero gets into that satchel quicker than words can tell, takes out a little granule, dissolves it in water, takes it to the one already in the jaws of death, presses the spoon between the cold, blue lips, and lets the vivifying liquid trickle slowly into the mouth and down the throat.

But let us suppose that it already is too late for that. He is armed with his trusty hypodermic syringe and proceeds to fill it with the same solution, picks up the skin—it makes no difference where—and forces the contents into the living tissues. He waits a few minutes, probably not seeing any perceptible results, then repeats the operation, and lo! after a few moments the machinery that had almost stopped forever starts to move. Slowly at first, but the ever-watchful engineer—the dispensing doctor—is at his post, with his fuel at hand, He watches the steam-gauge—higher and higher it goes, until the marking indicates that the engine is steamed up to a safe running capacity. The engineer has acquitted himself with honor, the train is safe and all on board are out of immediate danger. And the engineer never once thinks of receiving a Carnegie medal.

Now let us suppose that the doctor had been of the prescribing class and was compelled to send a runner across the street, probably having to awaken the local druggist, or worse still, had to send one some five or ten miles for the medicine. Where would have been your sinking, dying patient? The echo asks back, "Where?" Easy to answer, my friend: "Over in the happy hunting-grounds, and no laurels for the nondispensing doctor."

Now, Mr. Wholesale Druggist, do you wish to kick the dispensing doctor some more? If you do, just turn loose your venom, and I'll assure you that it will not be long until someone will be kicked out, and it will not be the doctor either by a long shot.

Now I'm getting down toward the last, as the little boy said, "perty fast." I just wish to add that I and the worthy editors of this journal do not agree on all subjects, and I presume it is best that we should not; yet I should like very much to have them line up with me.

I am a red-hot socialist, and I have been told that you editors are republicans. I once belonged to the same ranks, and something like six years ago, in Portland, Ore., came very near having an encounter with a brother doctor because he was advocating socialism. I was so mad that I did not even learn his name and address. I wish that, if he sees this, he would be kind and forgiving enough—and I know he will if he is still on top of the sod and is still a socialist—to write me, and I will send him, even at this late date, a written apology. I was then down on socialism, as I was down on THE ALKALOIDAL CLINIC when it first made its bow to the fraternity—would not investigate it, threw all literature in the waste basket, like a d——n fool. I feel ashamed of it now and am making an effort to cultivate a feeling of tolerance for everybody and everything, and above all, try to investigate all sides before rendering a final judgment, and as in the instances mentioned, through investigating to condemn I have not only been converted but have become an open advocate.

I am an open advocate of a fair and square deal between any and all people, and, in order to attain this, I am opposed to so many legal restrictions.

I have seen old grandmas with their kind and loving hands, together with their little teas and toddies, accomplish more in the sick chamber than ninety doctors out of a hundred can do with all their scientific medicine, and I hate to see those good old souls hampered, or anyone else for that, by some hidebound class legislation. Hence I say, cast away all laws designed to regulate medicine. The people who are so unfortunate to be our patrons are seeking for help, in time of need, and they judge us, whether justly or not, by our success in giving them that relief, and thereby we get on the top shelf in their opinion or are kicked into the gutter. I am through for this time, probably forever, as I am getting nearly old enough to die.

Z. T. Dodson.

Cleveland, Wash.

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[Feel better, doctor, for having let off the steam? That's right. We are willing to act as safety valve as far as our space goes.

Dr. Dodson's dramatic illustration of the dispensing physician's superiority over his nondispensing brother has much truth in it. Even those actively fighting the doctor's dispensing do not claim that physicians should be prevented from carrying medicines "for emergency." The answer is easy. Every illness to which we are called is, in a way, an emergency, and if we are prepared to act at once we can meet it; if not, we are like the plumber who is called to mend a broken pipe, and first comes to locate it, when he goes home for his tools. Only he gets paid for both trips; we don't, often. But, seriously, doctor, if it comes to a show-down, the dispensing physician will win out every time, especially if he has the proper ammunition, and if he can shoot straight. Catch on?

About socialism we may talk another time, though it's getting to be a dangerous thing to tackle political or religious problems in a medical paper.

A HEADACHE NUMBER

The Oklahoma Medical News Journal of Oklahoma City is publishing a special Headache number for May. Articles are furnished by the following: Dr. S. Grover Burnett, Neurologist, of Kansas City, Mo.; Dr. W. T. Salmon, Ophthalmologist, of Oklahoma City; Dr. Geo. A. Still of the original Still School (Osteopathic), of Kirksville, Mo.; and Dr. Alva A. Gregory, head of the Palmer-Gregory Chiropractic College of Oklahoma City.

This is an unusual and interesting issue and will be sent to any address upon the receipt of 25 cents.

MASTITIS AND ITS TREATMENT

Your article on Mastitis, in the December (1909) issue impels me to give my experience in the treatment of this affection. Just here I wish to say that not the primipara alone is liable to be attacked with it, but every woman who nurses her baby, at any period during lactation. Another thing to be remembered is, that it may occur when the mother loses her babe and must dry up the milk. To be brief, however, we will not enumerate the causes.

When I first started in practice I employed the stereotyped treatment with hot greasy cloths, belladonna plaster or solution of atropine, camphor, oil of turpentine, phytolacca, either the fluid extract or poultices of the bruised fresh root, which latter we can obtain here all the year round. While never in one of my cases of mastitis pus was formed when I saw it in time, still the applications and drugs were not without fault.

Now, however, I say to the mother when her baby comes, "If your breasts give you any trouble, let me know at once; I can prevent them 'rising.'"

When called upon, I instruct her to bathe the breasts in *hot water*, using, if possible, a vessel in which the breasts can be partly submerged, and then with the hand or a thick cloth thoroughly to bathe the breast, adding more hot water as it cools, always rubbing the breast in straight lines to and from the nipple, explaining, that as the milk ducts run in straight lines toward the nipple, that to rub with a circular motion will force the caked milk out into the tissues and do the very thing we are trying to avoid. After thorough bathing she is instructed to rub the breasts with the preparation I give her, which is simply oil of pennyroyal. If I write a prescription it reads like this:

℞ Olei hedeomæ rubræ.. ozs. 2

Sig.: Bathe breasts thoroughly as directed, and rub on medicine several times a day.

I instruct the druggist (or when I dispense it, do so myself) to put in sufficient red coloring to impart to the oil a rich color. Sometimes a patient says to me, "Doctor, this smells like oil of pennyroyal."

"Yes," I then reply, "it's very much like it."

One of my patients who had used it before sent a bottle back that was not colored.

Where the case has gone on for some time before I am consulted, or I think pus is about to form, I saturate the system with calcium sulphide, gr. 1-6 to 2 to 4 grains every one or two hours for two days, then every three or four hours.

If you will allow the digression, the pennyroyal is as good for animals as for human beings. In this country where the range is broad, cows stray away or hide in thickets and when the calf comes, it is some days before they are found or come home, and the udder is many times spoiled, i. e., has caked or abscessed. If abscess has not formed, the pennyroyal oil applied, with or without hot applications, will cure it in practically every case.

Men sometimes apply to me for something to dry up a mare's milk when they wish to wean the colt, or should she lose the colt. It works on them just as well.

This is varied practice, you may say, but the country doctor must be like the apostle of old, "All things unto all men," and we have questions asked us and requests made that would paralyze one who has never been a country doctor.

Now for the sore nipples. Before the baby comes I instruct the woman in these matters, as far as possible. I give the following:

Ext. hamamelis dest..... oz. 1
Ext. pinus canaden. co.... oz. 1

Sig.: Apply to the nipple several times a day.

If the woman is already nursing her baby I tell her to wash the nipples before the baby nurses. I have never found anything that will cure the fissured nipple or harden it like this. I sometimes add equal parts glycerin.

E. H. WINKLER.

DeWitt, Ark.

ACID- FRUIT- PULP POULTICES FOR MASTITIS

It may interest readers of CLINICAL MEDICINE to learn that green-grape poultices, in my experience, will cure mastitis. Green grapes are pounded fine, and the pulp is laid thickly over the entire breast (without warming), and covered over. This will relieve the pain and soreness in from two to twelve hours without any other treatment. The application should be kept moist (preferably with vinegar) or renewed every four to six hours. In the absence of grapes, use lemons. First roll the lemon to break the cells. Then peel and slice thin and apply to the breast, laying on two or three-ply deep, and bind on. One application usually will suffice, if employed early, in all cases of "weed." I

suppose cranberries would also act similarly, but these have never been tried by me.

How do I know? It happened this way. Late one autumn day in the late sixties I rode up to my gate, after a hard day's work, and found a colored man waiting my return. He stated that his wife was nearly dead with pain and swelling of the breast. It was almost dark and so a good eight-mile trip did not sound good to me. I must invent a plausible excuse. A forest tree overbranched my office building and a fine fox-grape vine climbed the tree, loaded down with green fruit. So I said: "See here; fill your hat full of those grapes, take them home, put them in a thin sack and beat them to a mush. Apply them cold to the breast, and in the morning I shall be out to see her. I'm sure it will give your wife relief."

Next morning I went, according to promise, and to my utter surprise found the woman's breast drawn into great corrugations, and the whitest part of her anatomy. Pain had gradually subsided and completely left in less than two hours, and with that the fever, a second application effecting a complete cure. Transferring myself from Mississippi to Texas, where fewer wild fruits grow, I naturally turned my attention to the lemon, and was delighted to find these quite as efficient.

I have been employing this treatment for now about forty years, with but one failure, and that was because of lack of proper application and care; this resulting in an abscess. In all other instances, when the application was made properly, and inside of ten hours, it was successful.

Every physician is familiar with the cause of mastitis, but few know just how easily it can be cured. "Weed of the breast" occurs so often during lactation and gives so much pain that every woman in the world should know this simple, safe remedy; any acid berry fruit, I believe, would answer. I have always thought that this mode of treatment was found out through pure cussedness.

B. F. ARCHER.

Sweetwater, Tex.

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[Many physicians moving only in cultured society or practising among Continental immigrants may never encounter the term "weed," as used by Dr. Archer, and may not even expect to find it in dictionaries. The word is of Scotch origin, but of unknown etymology. Among old-fashioned British and American people "weed" signifies a feverish condition with suppression of milk in a woman in childbed (ephemera, milk-fever, garget), but is also applied to lymphangitis, due to exposure, in a horse's leg (milk-leg in the horse). While by many the term is applied indiscriminately to actual mastitis puerperalis, the better-informed more correctly refer to this condition as "weed in the breast." As to the acid-fruit pulp, if possessed of any special antiphlogistic properties, citric acid in some pultiform vehicle might answer equally well in the absence of tart fruits.—ED.]

GATHERED FROM TEN YEARS' EXPERIENCE

After more than ten years' use of the alkaloidal and other active principle remedies, testing each one and trying to learn its limitations, I send you a few conclusions drawn from my experience. I put them down as they occur to me, or as copied from notes put down in the "Alkaloidal Therapeutics," blank pages for which you have so thoughtfully inserted.

Like most others I began the use of alkaloids with aconitine. In the cases where there is fever and nausea, tincture of aconite is so frequently rejected by the child that it is a pleasure to have a preparation that is effective and well

borne, equalizing the circulation and stimulating natural secretion.

Of course I *always* begin the treatment by clearing the alimentary canal, and some of the credit given to aconitine may be due to this procedure.

My experience in the use of atropine has been very satisfactory. I have used it successfully to arrest hemoptysis in tuberculosis and to control bloody stools in enterocolitis. In the latter cases 1-3000 gr. given, *to effect*, as needed, has acted promptly, warmed up the cold, shriveled extremities and changed a doubtful to a hopeful case. In tenderness and congestion of the prostate it gives prompt relief. In some patients the minutest doses are not tolerated and my observation is that these same patients do not tolerate arsenic any better.

For many years I gave as a tonic, citrate of iron, tincture of nux vomica, and Fowler's solution. In *nearly* all cases this combination acted well, but occasionally the symptoms of intolerance to the Fowler's solution would manifest themselves. Since studying the action of atropine, I have noticed that these same patients are idiosyncratic to both atropine and arsenic, whether owing to the use of the wrong drug for the case, or mistaken diagnosis, I am still trying to find out. Can you tell me? The strychnine arsenate pills produce the same symptoms in these cases.

Some twenty years ago I was prescribing tincture of digitalis for a young lady, the daughter of a family who would not hear of the use of calomel, which at their request I did *not* give, though I thought it indicated. Afer a few days they accused me of giving it, as the girl was profoundly salivated. Knowing I had *not* given any mercurial, I began to study up the effects of digitalis, and in the United States Dispensatory, 1871, found ptyalism mentioned as one of its effects. On stopping the drug the ptyalism disappeared and the symptom did not recur.

I have since wondered if *digitalin* would have produced the same condition.

Speaking of ptyalism, is it known generally, that salicylate of sodium, given with or at the same time as calomel, will prevent salivation? That such is the fact has been proven many times in my practice.

To clear up muddy, sallow complexions, nothing acts better than a course of calomel and saline laxative followed by salicylates.

Getting back to atropine, I find it very often takes the place of opiates in the relief of abdominal pain, especially the spasmodic and colic-like pains of adults.

Berberine in a case of splenic enlargement gave me good results.

Colchicine, added to laxatives, assists their action, promotes the flow of bile and relieves hepatic congestion. In a case of chronic rheumatism, five drops of wine of colchicum U. S. P., t. i. d., produced a constriction of throat, numbness of tongue and general formication which all disappeared when *colchicine* was substituted for the wine.

In mucous diarrhea *emetine* replaces ipecac, and acts well also as an expectorant and diaphoretic, besides being slightly laxative.

Glonoin has more than once proved a "life saver" in my practice.

Twice within two years I have called a consultant on account of difficult labor, where rigid os and perineum seemed the whole cause of trouble. To delay the pains until the consultant could come, a half strength H-M-C tablet was given, and in both cases relaxation came on, and delivery was effected without the consultant.

While these random notes do not cover my use of the alkaloids, I thought they might have a point somewhere in them that might help another as they have helped me. I wish I could impress upon every young man entering the profession the great help derived from

keeping a case record. If this were done we would find plenty of "experiences" to send to THE CLINIC, as our AMERICAN JOURNAL OF CLINICAL MEDICINE is still most frequently called by its friends. Among all the journals I take, THE CLINIC is by far the most helpful. I have taken it ever since it was an eight- or sixteen-page pamphlet. May its usefulness ever extend until we no longer have to ask what *strength* a drug is, but merely *what* the drug is in order to know its dosage. Go on with the good work and we'll all help.

I was told a story of an old German physician who was very successful, and at the risk of getting off a "chestnut" will repeat it. His confreres asked him to explain his success. He replied: "All I know is contained in that book," pointing to one on his table.

However he would allow no one to examine it. Finally the old man died, and the book was eagerly opened to learn the secret of his success. It proved to be blank, except the first page on which was written, *"Fus warm, kopf kald, hinter ofen."* (Feet warm, head cold, and keep the bowels open.)

This is the "clean-up, clean-out and keep-clean" practice of the alkaloidist.

A. A. NEFE.

Lookout Mountain, Tenn.

SIMPLIFIED BOOKKEEPING FOR PHYSICIANS

The writer has fashioned a system of keeping the records and accounts of his patients after the following manner, viz.:

He uses a system of index-cards, 5x8 inches, with two divisions, one of which is labeled "Open Accounts," the other "Closed Accounts." One thousand cards are sufficient to start with. They are ruled on both sides and arranged alphabetically. On one side the cards contain the data concerning the patient, in the following order, in vertical sequence: Name (this being followed by Age, Nativity, Address), History, Symptoms, Physical Examination, Clinical Findings, Diagnosis, Treatment.

The essential points only are noted in writing. This procedure eliminates a vast amount of useless writing which has no bearing upon the case. Thus, if a case under observation strongly suggests tuberculosis, obtain a tuberculous history, if possible. The same for diabetes, nephritis or whatever the case may be. Do not waste time in recording that the brothers, parents, and grandparents died of old age. Simply leave out the negative part and note down relevant facts, as it is the pathologic conditions in which the physician is interested.

On the reverse of the record-card the patient's account is kept. For balancing the account, a single ruling across the card will suffice.

To summarize, we have one side of the card for the patient's condition, the other for his account. One sweep of the pen suffices to close the latter. Several of these cards may of course be fastened together when an account requires it.

The physician, when prescribing, should always retain a copy of the prescription he gives to a patient. This is of advantage to him in more ways than one. First, it is systematic. Second, it is of great value in case of dispute. Third, it is a permanent record for the attending physician, showing just upon what line of treatment the patient has been placed from time to time.

The writer has designed and is using a prescription blank, or rather a prescription book, which is four inches wide by eight inches in length, resembling a check book. The paper is heavy, smooth and tinted, one hundred sheets making up a book. The inside cover acts as a blotter, which lasts as long as the book. The sheets are perforated down the center, allowing a generous-sized stub on

which a copy of the original prescription is written before this is torn off. This duplicate acts as a safeguard and as a double-checking system in dosage in case a prescription is challenged by the apothecary. The stubs are filed away, ready for reference.

J. CLEMENT JENKINS.

Lititz, Pa.

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[The above is an excellent adaptation of the card-system, which has come into well-deserved general use in the last ten or fifteen years. A considerable number of such systems designed for physicians' use are on the market, some more, some less complicated. Personally we have found perfectly plain cards, without any printing whatever, not only to be the cheapest, but to answer our purpose better than anything else for the records, case-histories, etc., while for the financial accounts we had cards printed as simple as possible.

It is a good idea either to have a number of cards printed with diagrams, for entering the results of physical examination, or to obtain rubber stamps with which these diagrams can be printed on the cards as needed. Such stamps can be had for very little money. In any case, the card-system, whether the 3x5 inch cards or larger sizes are used, is by far the simplest, best, most orderly and easiest way of keeping records, notes, memoranda, in short for taking note of all the thousand and one points which constantly come to our attention and have to be kept in mind for at least a time.—ED]

A REMARKABLE SURGICAL CASE

On this page we show the picture of a case reported to us by Dr. George L. Kilborn of Forestport, N. Y., and which occurred several years ago. The doctor sends us the photograph. The case is that of George Lanz, who was operating an edging machine in a lumber mill. The machine was stopped in some way, and on being released an edging was broken off and driven through Lanz's back. He was thrown to the floor unconscious, but soon regained consciousness, the board protruding from both sides of the body as shown in picture.

The patient was loaded on to a train and taken to Utica, a distance of fifty

A case of chest-perforation.

miles, where he was cared for at St. Elizabeth's hospital. The patient retained consciousness until he was placed on the table for operation. The opening was enlarged by Dr. E. M. Hyland, the operating surgeon, and by the use of a great deal of force he was able to withdraw the wood. The hemorrhage was insignificant. The right lung collapsed, and upon inhalation and exhalation the air passed freely from both openings. Though recovery was delayed by attacks of pleuritis and empyema, the patient finally recovered. This is certainly a remarkable case.

We also show a picture of Dr. Kilborn out in a boat on a beautiful pond or lake on a country place that he owns.

UNIQUE CASE OF MENORRHAGIA SUCCESSFULLY TREATED

The case here reported presents some unique features and may be useful to

others. The patient, a woman, age 48, had been sick for ten years. She was first taken with a severe form of neurasthenia and was confined to bed for a long time. After finally getting up she had menorrhagia so bad that she had to keep in bed for five or six days each month. She could not ride in a wagon or travel anywhere without bringing on menstrual bleeding. This condition became constant, attacks growing more frequent in the past year, so that she was compelled to stay in bed four or five days every second or third week. About two years ago she had an operation for piles and a perineorrhaphy done, but without beneficial results. After this unsuccessful operation she refused curetment, which was suggested. The woman was rather lymphatic in appearance, and she had frontal headaches at times. Her bowels were very regular;

Dr. Kilborn out in his boat

she dared not take laxatives for fear of bringing on a menorrhagic attack. Her general condition was good; uterus not enlarged. Her general feeling of debility I ascribed to her frequent and prolonged stays in bed. There apparently was no local cause for the hemorrhage and hence I ascribed the patient's trouble to deficient coagulability of the blood and relaxed condition of the muscular structures generally.

Working on this theory, the woman was given thyroid extract, 5 grains twice daily. In addition, a tablet composed of calcium lactate, grs. 8, and calcium chloride, grs. 3, was given three times a day, together with a tonic of hydrastin and strychnine.

As a result, the headaches disappeared and she went one month at first without being confined to bed, getting up earlier than usual. Shortly after this she suffered a relapse from excitement caused by a fire and was kept in bed two weeks. She took the calcium compound for six weeks, then I gave her a compound of Jamaica dogwood, black-haw, hydrastis, and a few drops of fluid extract of ergot, to be taken during the menstrual flow. This seems to work perfectly and she takes it only two days a month or whenever she feels the flow coming on. It has now been ten weeks since she was confined to bed, the longest period in ten years. She feels, naturally, very much better generally, and as it is now the time for the menopause, we confidently look for the present improved condition to continue.

This woman probably has taken barrels of medicine from different physicians without benefit, and her present improved condition is altogether due to the treatment as here described. The calcium compound evidently caused increased coagulation of the blood, while the other medication improved nerve tension and increased the contractility of the uterine muscle.

R. A. Black.

Sullivan, Me.

HONORS TO DR. WAUGH

The following item, which appeared in one of the Chicago newspapers, is self-explanatory:

"Leading members of the Italian colony of Chicago gave a banquet Monday night at the Hotel La Salle to Dr. William F. Waugh, dean of the Ben-

nett Medical College, and author of many medical volumes. Dr. Waugh is a well-known resident of Ravenswood and for several years has been associated with Dr. Abbott in the publication of THE AMERICAN JOURNAL OF CLINICAL MEDICINE.

"In recognition of Dr. Waugh's work in therapeutics, the Academia Fisico-Clinica Italiana of Palermo, Italy, recently conferred upon him a diploma as honorary member, and awarded him the gold medal of the first class of the academy.

"The banquet was planned by his Chicago Italian friends in celebration of the honor conferred upon Dr. Waugh by the principal medical institution of Italy."

THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS

We take pleasure in printing below some resolutions passed by the Chicago Association of Retail Druggists, which are self-explanatory. This movement for solidarity among our pharmaceutical friends is one which deserves to succeed. The retail drug trade is being gobbled up too rapidly by combinations of capital of various kinds. The proper remedy is for separate units to "get together" and act unitedly for the common good. If they will do so, and will work with the doctor, whether he be a "self-dispenser" or not, nothing but good can come out of this movement.

The resolutions follow:

Whereas, Various interests are covertly at work to undermine and destroy the influence of the National Association of Retail Druggists, which during the eleven years of its history has served the retail drug interests so faithfully and efficiently; and

Whereas, The policy of these subversive interests is to use individuals and associations that are weak in their loyalty to the national body in the furtherance of their plans, sowing among such the seed of distrust, inuendo and false charges, thereby doing unmeasurable harm to the true interests of pharmacy and the retail drug business; be it therefore, by the Chicago Retail Druggists' Association in quarterly meeting assembled,

Resolved, That we hereby express our deepest loyalty to the great National Association of Retail Druggists, of which we are proud to belong as the banner local association of retail druggists of this country, and to which we in common with our fellow druggists of America owe so much in the way of organization, protective and educational benefits, and be it further

Resolved, That we caution all members of druggists' associations, and the associations themselves against the deceptive tactics employed by our enemies, secret and avowed, and urge them, both as individuals and as associations to disregard and resent all false reports and malicious charges, and to stand manfully and loyally by our national body and its trusted leaders, knowing always that a true interpretation of facts, and the facts themselves will ever prove, as they always have done, that in the National Association of Retail Druggists as a fearless, independent, conserving and constructive force, we have the truest and best exponent of the retail druggists' commercial and professional needs that the world has ever seen, one that it has taken years of self-sacrificing labors of many heroic men to build and the destruction of which would amount to a calamity, the enormity of which would be too large to estimate; and be it finally

Resolved, That a copy of these resolutions be sent to the *Journal of the American Medical Association* with the request that they be published therein, and to the medical and pharmaceutical press of the country accompanied by a similar request in order that it may be made clear that the 900 retail pharmacists of America's most representative city which constitute the Chicago Retail Druggists' Association, are in the fight to a finish for the upbuilding, advancement and perpetuity of the National Association of Retail Druggists.

DEATH OF ROBERT KOCH

While this number of CLINICAL MEDICINE is in press, the morning papers for May 28 announce the death of Robert Koch, to whom we owe, more than to anybody else, whatever success has attended the struggle of the civilized world against tuberculosis, for it was he who discovered and demonstrated in the tubercle bacillus the ultimate cause of the disease. We can, on this occasion, only refer to the sad loss which we have sustained and intend to write more fully upon the importance and value of Koch's contributions to science.

CLINICAL · MEDICINE
POST·GRADUATE·SCHOOL of THERAPEUTICS

George F. Butler, M. D., Director
Thomas J. Mays, M. D.
Otto Juettner, M. D.
C. E. de M. Sajous, M. D.
William F. Waugh, A. M., M. D.
Alfred S. Burdick, A. B., M. D.

PART III—LESSON NINE

PULMONARY TUBERCULOSIS

THE DRUG TREATMENT OF PULMONARY TUBERCULOSIS

Disease-Labels.—The tendency to consider disease from the standpoint of the disease-label alone has to a very considerable extent vanished from pathology, but it still dominates therapeutics, especially in its nihilistic trend. The conception of disease as a new force in the organism, altering the physiologic balance previously existing and thereby distorting processes, physiologic in themselves, to nosologic ends, has not obtained the dominance in therapeutics that it has in pathology.

The liking of primitive minds for the absolute in lieu of the relative appears in the erroneous assumption of the universal appplication of self-limitation of disease. The existence of atypic forms of so-called self-limited disease should render futile any dogma based purely on self-limitation. The existence, moreover, of complications of such diseases should bar absolute therapeutic application of this doctrine.

Behind the action of any morbid factor lies the unknown quantity—constitutional vitality. This depends on the constitutional strength which has been received from the ancestor and which has survived the periods of stress. This constitutional vitality is the factor which requires aid in its battle against disease.

Disease creates conditions which weaken and enfeeble vitality more than the disease to which the conditions owe their origin. This is peculiarly the case where the disease, while of local origin, has a tendency to constitutional expressions. Prominent among diseases of this type is tuberculosis.

Error of the Germ-Faddists.—With a growth in the belief in the specific origin of this morbid state has come a tendency to ascribe everything occurring in it to germ infections. This has been the pathologic crime of germ-faddists, but nowhere has it been so strongly manifested as in respect to tuberculosis. The action of the toxin has, from the advent of the germ-doctrine under Pasteur, been too much ignored. Doctrinaire physicians, with the natural predilection for the occult appertaining to primitive mentality, treated germ action with the same reverence that the medi-

cine man did the gods and godlings of disease, and declined to analyze its *modus operandi* from a philistinish fear of the socalled theoretical.

There was a vast clinical material of the constitutional effects of tuberculosis which, whether gathered under the doctrine of inflammation which immediately preceeded the germ-doctrine, or under the specific doctrine which preceded this, that was of enormous value in the treatment of tuberculosis. This material had led to the enunciation of every one of the principles now becoming dominant in therapy. However, it had resulted in proper treatment of complications in which our modern therapy of tuberculosis is singularly lacking.

Need of Treating Complications.—These complications, which seriously sap the general vitality, must be met with treatment specificially directed to them, and herein fails the much-lauded open-air, hyperalimentation treatment. It is a singular illustration of the effect of impressionism in medicine that some of the most serious complications of tuberculosis are completely ignored. This appears, as usual, most markedly in the extra-lung manifestations. The conception of tuberculosis as a diathesis was a truer one than the notion of its localized pulmonary nature, which too emphatically dominates thought today.

The Phthisical Habitus.—The people who are predisposed to phthisis have the heart diminutive; the right ventricle exaggerated. Two great types of degenerate constitutions occur.

One of these classes comes under De Giovanni's category of *the torpid type*. The victim usually is coarse-featured and coarse-skinned, with peculiarly unstable mentality. Slowness of comprehension is combined with power of continuity of thought; at times mental apathy alternates with quickness of perception. Decided exaggeration of the lymphatic system (connected with the utilizing of material elsewhere than at the point where it has been rendered unfit), with deficient function occurs, resulting in a fitting soil for germs. In other respects the torpid resembles the second type, that is

The erethistic (nervously fussy) type of De Giovanni. This is generally characterized by the presence of a clear complexion, a fine skin and features well cut and often beautiful. The lips are red and the teeth pearly white, though liable to early decay; the eyes are large and full, the pupil being widely dilated and the white of the eye beautifully clear. The eyelashes are long, curved and silky, and the blue veins show distinctly through the clear, thin skin. The bones are light, the hand and feet well formed, the stature often tall, and the whole figure slightly and gracefully built.

The erethists generally remain spare, and have a strong dislike to fatty food. They are vivacious and excitable, and the intellectual faculties are often highly developed. At an early age they show marvelous activity. The regularity with which such precocious tuberculous children die has given rise to proverbs anent exceptionally clever children that they are "too wise to live long." Wanting in stamina, they are incapable of prolonged exertion, either of mind or body, and break down under conditions which would not prove injurious to the healthy. They are continually taking "cold," and are prone throughout life to all acute affections of an inflammatory character.

These children, deficient, as they are, in vitality, are carried off in numbers, during infancy, by convulsions, brain-fever, water on the brain, exhaustion, diarrhea, teething, and other ailments, or they succumb at the second dentition or else at puberty. A small proportion reach maturity. Few live beyond thirty-five or forty years of age. Among these, the females are inclined to frequent and multiple pregnancies.

However brilliant intellectually, these individuals are strongly emotional, impressionable and impulsive. There is a marked absence of mental stability. They are suspiciously capricious. The great secreting and eliminating glands undergo with peculiar frequency the perversions already described. Neuroses and psychoses are decidedly frequent in childhood and youth.

The Degenerative Power of Tuberculosis is not always due to the influence of the germ, or even of the toxin produced by it, but to the state of nerve weakness resultant on the disorder.

The victim of tuberculosis (especially of the lung) is a suspicious, yet hopeful nervous invalid whose functions are irregularly performed, and who, therefore, is likely to leave scions with greater defect, especially as their maternal factor, either through infection or worry, can hardly escape being weakened.

Tuberculosis attacks the bones of the offspring, especially the spine and hip-joint, but the victims of the latter frequently regain health after apparent recovery from the local disease through surgical procedures. If the vicim of the hip-joint disorder be of the erethist type, marriage is not unlikely. Despite the deformity produced by spine disorder, popular superstition as to the "good luck" of a hunchback leads to marriage among the working class. Monetary and social considerations effect the same result among the wealthy classes. Here deformity does not prevent marriage, but it predisposes to sterility through birth difficulty.

The Phthisical Cough.—There is, perhaps, remarks L. F. Flick, no symptom in pulmonary tuberculosis more frequently misunderstood and misinterpreted than that of cough. With many people cough and consumption are synonomous. With them cough means consumption, and no cough means no consumption. This view of the matter is misleading, and, unfortunately, is often shared by the physician. In truth, tuberculosis of the lungs in itself does not produce much cough, and the victim may be entirely free from cough.

The cough which accompanies tuberculosis of the lungs is most frequently caused by a mixed infection of some kind or another. The only time when the tuberculous process itself produces cough is when there is broken-down tissue to come away, and then the cough is profitable. It is indeed surprising how much tuberculous infiltration there may be in the lungs without a reflex disturbance strong enough to produce a cough. This is particularly true of people at rest. This strange phenomenon is due to the fact that an individual has normally, an apparent excess of lung-tissue, or more at least, than is required under ordinary circumstances. Not till he takes exercise or does something which calls into action his reserve lung power is much cough set up. Rest and mental control are ordinarily all that are needed to check excessive cough.

This view, while well based, ignores irritations which, even without gross lesion, require attention because of the exhausting coughs they cause. Cough, therefore, is among the complications which requires attention to a greater degree than they usually receive.

Phthisical Cough of Various Types.—Cough in the tuberculous is of many types and requires medicinal treatment. Some of the more irritating hacking coughs allied to those of hysteria and neurasthenia yield to suggestion as to power of control. Many a phthisical patient can control the hacking if it be suggested that he has the power to do so and that he need not yield.

The hacking cough, however, of tuberculosis is more serious than the same cough found in hysteria and neurasthenia, because it very frequently has an objective origin and serious consequences. It may result, and often does, in the rupture of a degenerated pulmonary blood

vessel. It is possible to combine suggestion and therapy by the use of certain sedatives, such as heroin in small, non-nauseating doses, and preferably apocodeine hydrochloride. The last, however, it should be remembered, has a slight laxative tendency and would be contraindicated in cases where diarrhea from renal disturbance is present.

Formula for Hacking Cough.—The following combination in form of pill or capsule acts well in many cases: Codeine sulphate, gr. 1-67; emetin, gr. 1-67; aconitine (Abbott), gr. 1-500; hyoscyamine (amorphous), gr. 1-1000. It is an excellent combination. One of these pills may be given every half to two hours, pushed to effect.

The sweet cough syrups and elixirs should, in general, be avoided, as they often are liable to upset the stomach and impair the appetite.

Most of *the diarrhea* in tuberculosis, as Flick has shown, is the result of renal insufficiency and not of intestinal tuberculosis. In these conditions, when cough is present, heroin, codeine, and Dover's powder often act excellently. The latter has frequently a peculiarly beneficial action on the cough and does not necessarily cause diaphoresis.

Coughs attended by marked *bronchorrhea,* with sticky and adhesive secretions require stimulating expectorants, emetin, senega, lobelin, ammonium hydrochloride, which are of benefit in these states, particularly in combination. Here the indication is to avoid a nauseating effect. Very frequently the balsams, inclusive of copaiba and the preparations of codliver oil, answer excellently, in this class of cases, as expectorants. The same is true of yerba santa and allied drugs.

The sticky, adhesive expectoration cases often precipitate *pulmonary hemorrhages,* some of which simply relieve local congestion of the bronchial tubes, and hence have not a specially serious significance.

In certain cases, however, there has been blood-vessel deterioration and they produce *dangerous hemoptysis.* For this reason they require treatment, as they tend to reduce the vitality of the patient. Hemoptysis, as a rule, does not require active treatment. The patient should be kept quiet in bed. A saline laxative often will check the hemorrhage. Ice to the chest, ergotin, adrenalin, morphine, have all been used with success.

Complicating Diarrhea.—The next serious complication which yields to drug treatment is diarrhea. In many instances, as already pointed out, this is secondary to renal insufficiency, and here uranalysis often will reveal a low degree of urinary acidity, and the presence of indican and allied products from the intestines, hyalin, granular and cylindroid casts, and other evidences of renal strain.

Dietetic treatment is the first indication here and the starches and sugars should be enormously reduced. Tuberculosis patients who ordinarily can take *pure* ice-cream with advantage, under some circumstances have diarrhea therefrom. In such cases it will be found that cornstarch has been used in the preparation of the ice-cream.

Treatment of Renal Insufficiency.—Here Basham's mixture often exerts a marked influence, and frequently diarrheas of renal origin will yield to it alone. Despite the laxative action of codliver oil, it has the same beneficial influence here that fats have in renal conditions.

The diarrheal states often precipitate rectal fistula. In some of these cases the fistula is the product of tuberculous infection. Frequently, however, the fistula is the result of hemorrhoidal states which have no direct relation to tuberculosis and which, therefore, do not have the illomened significance ordinarily attached to rectal fistula in the tuberculous. In either case, however, any fistula should be promptly treated.

Renal insufficiency often underlies *the pyretic states* which exhausts the tuberculous and are secondary to the dis-

turbances of the heat-regulating apparatus consists of a thermoinhibitory, thermoexcitory and thermostatic system of nerves. The action of the thermostatic nerves is attended by less general disturbance, while the action of the thermoinhibitory is attended at times by marked cardiac and dyspneic symptoms. The overstimulation of this system of nerves underlies many of the states of depression which so frequently follow the use of coaltar synthetics.

Disturbance of the heat-regulating nerves is apt to be attended, like all febrile disturbances, with marked general nervous irritability, which works in a vicious circle with the pyretic disturbances to which it owes its origin. This *general nervous irritability* underlies the capricious optimism of the tuberculous and predisposes to pyretic disturbances on slight causes from the strain it produces on the kidneys through the nerve waste which it occasions.

Treatment of the Irritable State.—Very frequently the irritability, and with it the pyrexia, yield to small doses of phenacetin or aconitine, either alone or combined with veratrine, digitalin or strychnine, according to indications.

This, however, does not remove *the underlying kidney strain* from the toxins and from the influence of the general nervous irritability. There are other synthetics, however, which exert a direct action on the kidneys in this particular and to which the pyrexia will yield without cardiac depression. For its pyretic action in this particular, theocin is preferable. It will often relieve the pyrexia and the nervous irritability without cardiac depression. At times, however, while not actually causing nausea, theocin interferes with the appetite to such a degree as to cause apathy for food. The reverse is the case with thiocol. This, while not as marked an antipyretic as theocin, has a markedly stimulating effect on the appetite and a very decided influence on general nervous irritability.

The Influence of Renal Involvement.—It must be remembered that the complexity of the renal plexus involves a great many relationships, and irritation of the kidneys is apt to be widely extended. The renal plexus is made up of fibers from the aortic plexus, from the solar plexus, from the semi-lunar plexus, and from the splanchnics.

It is obvious from this wide distribution that *renal inefficiency from toxins* will cause marked general nervous irritability. The two synthetics named, therefore, will, for these reasons, have a marked influence on pyrexia and on general nervous irritability. They can be efficiently aided by cold sponging, night and morning, down the spine on either side and on the inner and outer aspects of the thighs. They should be given in the morning so as to affect the afternoon rise of temperature so characteristic of tuberculosis. The toxin not only leads to a pyrexia and general nervous irritability, but at times it produces a mental state closely allied to intoxication from alcohol and it also produces a coma which has been more than once mistaken for opium coma. These states, which constitute some of the serious dangers to the walking case of tuberculosis, can be guarded against by the employment of the two synthetics named.

The general nervous irritability, whether affected with pyrexia or not, is a condition which, like all neurasthenic conditions, tends to waste and insufficient elimination, and with the insufficient elimination comes the tendency to the two nervous states described, which can be guarded against with the proper use of theocin and thiocol. The toxin, moreover, very frequently produces the cardiac weakness common to all neurasthenic and autotoxic states. These are usuallly accompanied by *dyspnea,* which is secondary to the cardiac weakness and not of primary pulmonary origin. Here 1-200-grain doses of strychnine nitrate, given so as to secure cumulative action,

are markedly effectual. The cumulative action is best secured by the patient being given no more than six doses in an hour and then, if no effect is produced (which is rare), no more should be given for two hours. Many a tuberculous patient subject to this toxin-caused cardiac neurasthenia finds it possible, through the strychnine, to take open-air exercise and carry on an ordinary occupation, which, without the strychnine, would be impossible.

Independently of the temporary tonic effect, *strychnine thus wards off states of exhaustion* which deplete constitutional vitality. In cases where there is marked dyspnea, independently of marked pulmonary change, quebracho and aspidospermine will be found of great value.

The drug-treatment of tuberculosis simply consists of the use of things which prop up the general vitality and which prevent this from being exhausted through the depressing influence of symptoms altogether too much disregarded.

The Distressing Diarrhea of phthisical patients occasionally is very trying and hard to stop. The following may be used: Lactic acid, oz. 1 to ozs. 2; syrup of orange, ozs. 6; water, ozs. 6. Directions: To be consumed during twenty-four hours.

Another method of checking the diarrhea is the administration of small enemata containing tannic acid and tincture of opium mixed with cornstarch water, introducing an ounce or two of this mixture every three or four hours until the diarrhea is checked. Cotoin, geranin, hydrastin, bismuth subgallate are also very effective as astringents in these conditions.

Treatment of the Dyspnea.—One very striking manifestation of tuberculosis is dyspnea. Of this there are many types, which do not, however, have the destructive pulmonary significance assigned to them. They may be ranged in three classes: the asthmatic, the emphysematous, and the cyanotic type.

The asthmatic type generally is of the uremic variety, and is due to the renal insufficiency concomitant to tuberculosis. In this type there are two great indications: to increase elimination, and to correct cardiac irritability. The first, increase of elimination by the kidney, may be accomplished through the use of arbutin or a strong infusion of birch leaves. For the second condition—irritable rapidity of the heart—we may add digitalin, but use it very cautiously. Correction of this latter condition, however, may be attained by the use of strychnine pushed just short of its cumulative effect.

Very frequently strychnine alone, especially the nitrate, not only acts as a respiratory stimulant, but by increasing oxidation and thereby favorably affecting metabolism it produces marked improvement in the general condition. As its cardiac influence improves renal circulation, kidney insufficiency is greatly lessened.

In the emphysematous type the ordinary characteristics of emphysema are found inclusive of the gross lesions. This condition is secondary to tuberculosis, for in true primary emphysema tuberculosis rarely occurs.

In this type the orthopnea which often occurs can be relieved by fumes from the solanaceous plants and of potassium nitrate, besides the other inhalations usually employed here. Amyl nitrite is not contraindicated, since it controls the distressing cardiac rapidity and its consequences.

The third type is often attended by *cyanosis* and *orthopnea*. Here quebracho, or preferably its alkaloid, aspidospermine, may be advantageously employed. That both quebracho and aspidospermine have an influence in increasing the amount of oxygen in the blood has been repeatedly shown by Penzoldt and others. Strychnine arsenate and aspi-

dospermine act very advantageously as synergists. The strychnine has a decidedly favorable influence on the psychic distress produced by air-hunger. Aspidospermine aids this influence both directly and indirectly. Treatment of dyspnea, therefore, has both a physical and psychic effect, which, through the increased hope it gives, encourages the patient to continuous effort and controls the suspicional caprice which is the worst curse of the tuberculous.

Night Sweats.—In regard to the distressing night sweats, a thorough hydriatic attention to the skin cannot be sufficiently emphasized. An old domestic remedy, often effectual, is to administer a drink, before retiring, composed of one teaspoonful of brandy and 6 to 12 ounces of lukewarm milk. Two teaspoonfuls of cold sage tea frequently serves the purpose. If such measures fail to act, more direct medicinal agents should be resorted to. For this, one single dose daily, taken at bedtime, of atropine sulphate, 1-67 grain or less, with or without agaricin, 1-6 to 1-2 grain is very effective, the following representing good combinations: (1) Agaricini, grs. 15; pulveris Doveri, dr. 1; atropini sulphatis, gr. 1-3; pulveris althææ, mucilaginis acaciæ, ana quantum satis ad massam e qua formentur pilulæ æquales. No. 60. Directions: One or two pills in the evening. (2) Acidi camphorici, grs. 15; dispensantur tales doses No. 10. Directions: Take two or three powders in wafers at bedtime, with short intervals between their administration.

Dermatoses of the Tuberculous.—Among the sources of distress to the tuberculous are not rarely dermatoses. Tuberculous lesions of the skin would be much more numerous than they are if it were not that the temperature of the skin is not favorable to the growth of the tubercle bacillus, and the uninjured epidermis being practically impermeable for bacteria, affords an excellent protection. Location is a determining factor in lupus.

In patients suffering with tuberculosis there are, as Wallace remarks, lesions of the skin other than those which are strictly tuberculous.

From malnutrition and anemia the skin becomes pale and dry and sometimes grayish; it may become glossy, and frequently it is covered with branny scales; and from interference with the circulation it assumes a cyanotic hue. The sebaceous glands sometimes secrete an excess of sebaceous matter, rendering the skin greasy.

Pityriasis versicolor is a common eruption in patients suffering from tuberculosis. The lesions are at first small, but they eventually develop into patches of considerable size, sometimes covering the whole chest. The color of the patches is yellowish brown, and the skin shows branny desquamation. The patient is rarely itchy, except when he sweats profusely. Although the parasite finds favorable soil in patients with tuberculosis, it cannot be said that this skin disease is diagnostic of tuberculosis.

Intestinal complications in tuberculosis are responsible for erythematous eruptions. The forehead and cheeks, especially below the eyes, frequently are sites of brown pigment spots known as chloasma phthisicorum. Pityriasis tabescentium is a deteriorative process caused by a skin atrophy, and occurs in advanced cases of tuberculosis; the patches are larger than in pityriasis versicolor, and are not so sharply defined. Clubbed fingers and nodular swellings of the toes and other joints are frequently observed. The x-ray observations have shown that in these cases the soft parts only are involved. The nails of patients are brittle and frequently cyanosed. The hair exhibits degenerative changes; it becomes atrophic and loses its gloss, becoming dry and splitting easily. Alopecia sometimes occurs from atrophy of

the follicles. Herpes zoster has frequently been observed. Cutaneous emphysema is rare.

Autointoxication Cause of Skin Lesions.—With the exception of lupus, the dermatoses described are those in which autointoxication plays a predisposing or a determining etiologic part.

In all, improved renal and hepatic action aided by increased oxidation greatly improves the general condition of the patient. In the tuberculous, arsenic, carefully guarded as to its gastric effects, is peculiarly indicated, since it has a decidedly beneficial effect on irritability of the respiratory center.

Arsenic an Important Remedy.—In certain forms of pulmonary phthisis arsenic is equal, if not superior, to any other remedy. It is useful, however, only in those conditions which are characterized by excessive expectoration and a slow degenerative process. The good results of the arsenic treatment in these cases is shown in a conspicuous manner by a marked improvement in the general condition of the patient, there being a lessened pulmonary secretion; a reduction in temperature, improvement of appetite and consequent increase of the body-weight. Arsenic is contraindicated in pulmonary tuberculosis when the cough is harsh and paroxysmal, with but scanty expectoration and a tendency to pulmonary hemorrhage.

A very efficacious compound for proper cases is composed of: strychnine arsenate, gr. 1-67; iodoform, gr. 1-6; calcium lactophosphate, gr. 1-6; nuclein, gtt. 5. This combination goes a long way toward arresting vital decay and destroying the tuberculous virus as well as modifying the bronchial secretion. Four to eight of these pills may be given daily.

The Antiseptics in the Treatment of Phthisis.—One of the first consequences of the germ-doctrine was the idea of a bactericidal therapy. This was an exceedingly crude conception as first propounded, since it assumed that antiseptics had a specific attraction for bacteria, which could pursue these inimical microbes through the tissues and organs, while leaving the latter unaffected. This absurd hypothesis was one of the many extravagant phases of medicine which followed upon the adoption of the germ-doctrine. For a time pathology was swept into the background.

The pulmonary location of tuberculosis and the fact that certain medicinal substances are excreted through the lungs led to the attempt, entirely logical in its conception, to treat pulmonary lesions with agents which are excreted through the air passages. These agents were principally essential oils and allied substances, prominent among them being creosote. The latter, however, has many objectionable and untoward effects and its excretion by the lungs is unfortunately exceedingly limited.

Fütterer many years ago, employed, both in pulmonary tuberculosis and in pneumonia, oil of birch which is the most concentrated natural source of methyl salicylate. This agent, while not entirely destitute of untoward effects, has undoubtedly a beneficial action on local changes, both from bacteria and from toxins. It also has decided bactericidal action, and is excreted in considerable quantities by the lungs. It may be administered by inunction in the armpits and between the thighs. Beside its bacteriological action it has decided alterative properties, which latter influence the biochemic effects to the toxins.

Nuclein a Valuable Remedy.—Dr. Edgar P. Ward of St. Louis has used with great success triticonucleinate of sodium in physiological salt solution, administered by intravenous injection. The poikilocytes rapidly disappear from the circulation; the hemoglobin in solution is eliminated by the liver as bilirubin and biliverdin; the deformed cells are replaced by new and healthy erythrocytes from the normoblasts more rap-

idly than occurs under any other form of treatment thus far devised.

The author mentioned has been using a solution containing approximately six grains of sodium triticonucleinate to the ounce, standardized to one milligram of organic phosphorus to each cubic centimeter. The physiologic salt solution for dilution is made up of calcium chloride, 0.25; potassium chloride, 0.10; sodium chloride, 9.00; water, 1000—this conforming to the specific gravity of the blood.

Following the intravenous injection of nuclein, the percentage of hemoglobin is markedly increased, as is also the number of red cells, while the specific gravity becomes normal, or nearly so. This is of particular importance in tuberculosis, in which the danger to the patient arises less from the tubercle bacilli directly than from their toxins, and from mixed infection. Therefore, if patients can be subjected to treatment before mixed infection occurs, the blood may be brought up to normal and tissue resistance thus be increased.

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DIRECT TREATMENT OF TUBERCULOSIS

The direct treatment of tuberculosis may be defined as that which is aimed at the tubercle bacillus. We may attack the invading microorganism and attempt to destroy it, or we may pursue a Fabian course and endeavor to starve the enemy out by cutting off his supplies and directing a guerilla warfare against him.

The Nucleins presumably act by arousing the vital forces of the body to resist the invaders. Prof. Ward of St. Louis has directed attention to this matter in a paper remarkable not only for the results which he has announced but for the scientific manner in which his studies were conducted. This gives his views an importance by no means to be attributed to the simple announcing of a cure. Altogether it looks as if Prof. Ward's method were one of the most important before the profession today.

Personally I am somewhat skeptical as to the ordinary physician's success in administering nuclein intravenously, and while the method has its advantages, I am disposed to advise the use of this remedy hypodermically, at least in cases where difficulty is experienced in securing its intravenous administration.

Sulphide Saturation. — Another method of combating the bacillus, which has been frequently suggested and never tried out fully, is saturation with the sulphides. If this proves successful with that most difficult of organisms, the gonococcus, it ought to succeed with the tubercle bacillus. This method has the merits, at any rate, of being harmless and of easy application.

Give a grain of calcium sulphide and a milligram of arsenic sulphide before each meal and on going to bed, increasing the doses to seven daily if necessary. Within forty-eight hours the skin should exhale the odor of sulphureted hydrogen, indicating saturation. This may be kept up without the slightest injury for at least a month. It is difficult to believe that any microorganism can remain alive in the system after such a course of treatment. The one necessary precaution is that the sulphides be of full U. S. P. quality, otherwise the experiment is worthless.

Crotalin is still on the experimental list. A number of reports received confirm the encomiums upon it given by Prof. Mays. Others are not so favorable, while some are decidedly unfavorable. All we feel justified in saying as yet is, that the remedy is one of tremendous power and not to be employed rashly or inconsiderately. My personal impression is that a force of such great power in its influence over the bodily functions ought to be studied and placed at our disposal, the full value of which, however, can only be secured when the

nature, properties and limitations of the action of this new agent are fully comprehended.

In the Adjuvant Treatment I have as yet no reason to modify my views as to the importance of keeping the alimentary canal clear and aseptic.

Fecal retention and toxemia are peculiarly liable to occur in the progress of tuberculosis, and are more disastrous here than in ordinary conditions. The nervous system is especially impressible in these cases and the influence of fecal toxemia is more disastrous than in most other conditions. Take any case of tubercular phthisis, empty the bowels completely and disinfect them with a sufficiency of calcium sulphocarbolate, and the improvement which results from this simple measure will quickly convince the attending physician of its utility.

Looking back over the cases which I have treated during my forty years of medical practice, I can see that each new method which arose during that time was applied with a certain degree of success, undoubted cures resulting; cures which we could scarcely acknowledge to be such in the early days. That was before the discovery of the tubercle bacillus gave us certainty as to diagnosis and comfirmed our favorable prognosis, as the bacilli became less and less frequent in the sputa and finally disappeared, the general condition improved correspondingly.

Of my earlier cases there is none on which I look back with more satisfaction than that of one man who, at my suggestion, became a tramp. However, as there are good trusts, possibly, as well as bad ones, there may be useful tramps as well as nuisances. This man learned to apply varnishes, and started forth with a kit of varnishes and brushes, proffering his services at each house at which he stopped. He soon found that he was earning a better living than he had done in the city, while the open-air life restored his health. When I last heard from him, some five years after he had taken up this life, he looked upon himself as long since completely cured, but wisely continued in his occupation, reasoning that the best way to preserve his health was to continue the mode of life which had restored it.

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PHYSIOTHERAPY IN THE TREATMENT OF TUBERCULOSIS

The Supremacy of Light.—A few statements concerning the biologic importance of light and the effects of light on organic matter, especially the living human body, will serve to illustrate the therapeutic position of light in the treatment of tuberculosis.

Light controls the intake of oxygen and the output of carbonic-acid gas. During the day the amount of oxygen which is assimilated by the human body is between 20 and 30 percent greater than during the night. This means that during the hours of imperfect or no illumination the retention of waste is more or less well marked. Some physiologists consider even the phenomenon of sleep as being a product of carbon-dioxide retention and of coincident poisoning of certain nerve centers.

When the amount of light to which the body-surface is or ought to be exposed is reduced, there is at once a diminution in the manufacture of coloring matter in the blood-cells, i. e. hemoglobin. The hemoglobin of all warm-blooded animals is a biologic derivative whose extraction and decomposition depends on the light of the sun. In this respect it is analogous to chlorophyl or vegetable coloring matter, which likewise is a product of solar radiation. Plants that are reared and raised in dark places are practically colorless. The human body that is deprived of its physiologic amount of light also loses its

color by gradual diminution in the coloring matter of its blood-cells.

Since it is the blood-coloring matter that carries the oxygen, it stands to reason that the body loses its oxygen-carrying power in proportion to the degree of reduction of its hemoglobin. Without hemoglobin to take up and carry oxygen it is useless to attempt oxygenation. The physician who is making his consumptive patient inhale oxygen from an oxygen-tank or ozone from one of those pretentious-looking ozone-generators that are attached to static machines is wasting his own time and that of his patient unless the latter has had a chance to increase his capacity for oxygen absorption. In order to accomplish this, *"let there be light!"*

Finsen has shown us that it is principally the chemical rays of sunlight that have a characteristic affinity for oxygen. Finsen's cure for lupus by applications of actinic rays dwindles into insignificance when we think of the incomparable fitness and efficacy of these rays of light in the treatment of tuberculosis pulmonum.

The true greatness of Finsen's work lies in the establishment of a scientific principle which makes sunlight, or, rather, the actinic rays of sunlight, the eternal and universal specific in the treatment of consumption.

The Sunbath is *the* great remedy in the management of tuberculosis. Sunlight in cases of tuberculosis is more important than air. It should be applied persistently to the nude body of the consumptive, either directly or in a solarium, or in an arc-light cabinet, which, however, at best, is a poor substitute for the genuine article. I cannot emphasize too strongly that the whole body of the patient must be exposed, without the intervention of even one layer of clothing. Then only is it possible to produce the effects on metabolism, which increased excretory and respiratory skin function is capable of causing. This is the Finsen idea in its last consequences.

The tendency of to-day is to divorce the tuberculous patient from ill-ventilated dwelling and place him where the air is fresh and oxygen copious. Let us go one step further and divorce the consumptive from clothes of any and all sorts and expose his skin to the light. To put the patient in a pure and rich atmosphere is comparatively of little value if the patient does not possess the power of assimilating oxygen through his lungs. This power is wonderfully increased by acting upon the metabolic machinery of the whole organism through the surface of the body.

Most of us are liable to forget that the skin is equal in physiological importance to any structure or organ in the body. We breathe through the skin, the output of body-heat and waste products of combustion is controlled by the skin; the "tone" of the nervous system, especially the sensory system, is preserved by the impingement of actinic and luminous rays on the nerve supply of the cuticle; the oxygen-carrying power of the blood is enhanced by the pigmentation which takes place in the blood-cells in and beneath the surface.

Let me make this plea on behalf of the *sunbath as the necessary foundation of all rational therapy* in the treatment of consumption. It is the logical beginning of physical therapy in these cases. In connection with this phase of the subject let me add that the notorious frequency of tuberculosis in the negro is attributed to the pigment in the negro's skin, which prevents the entrance of the actinic rays and deprives the body of the negro of the germicidal effect of actinic translumination.

Iron Therapy and Sunlight.—Those who believe in the blood-making quality of iron and are in the habit of administering the latter will be interested in the statement that exposure of the patient's body to sunlight for hours

after iron has been administered will enhance the effect of the ferruginous substance. By its intense oxidizing action the actinic light of the sun facilitates the change of metallic iron into blood-iron.

The beneficent effects of sunlight can be produced on a small scale by certain electro- and photo-therapeutic applications. For office purposes these applications are admirably available because, while they, of course, are not equal *in degree* to the radiating modalities which come fresh from the workshop of nature, they are the same *in kind* and are capable of doing a great deal of good.

The electric arc has many advocates among physiotherapeutists. This application should be given in a suitably constructed cabinet, capacious and well ventilated. Four, six, or more arcs should be used. The patient should be nude and comfortably placed on his back or side. His eyes should be protected by blue glasses. The thermic rays can be effectually intercepted by pieces of blue glass properly placed near the arc in the direction of the patient.

Electrotherapeutic Considerations.—Electrotherapy offers some auxiliary measures of value. I refer to this fact with special emphasis because so many physicians have nothing but a shrug of the shoulders or even a disdainful sneer when electrotherapy is mentioned. I feel sure that with broader knowledge and higher medical education better appreciation of this useful branch of practical therapeutics is bound to come.

The so-called *high-frequency* current applied to the whole body in a properly constructed cylinder (diasolenic cylinder, autocondensation couch, autoconduction cage) effects the oxygen-supply and the hemoglobin production in a very characteristic manner, as shown by the physiologic experiments made by d'Arsonval. The magnetic wave-radiators which have recently been brought to the notice of the profession produce similar effects.

In connection with this subject it is interesting to know that the tubercle bacillus is readily affected by these radiations of high-tension energy. A culture of tubercle bacilli is quickly rendered inert or killed by concentrated chemical rays. A high-frequency current will produce the same result after prolonged suspension of the culture in the magnetic field of an Oudin resonator.

In the use of electrotherapeutic applications much will depend on the physician's technical skill and his power of individualization.

Technic of Tonic Faradization.—Sir James Grant thus describes the technic of general tonic applications of the faradic current in tuberculosis:

"1. Moisten the skin of the abdomen with warm water and a sponge, before applying the electric current, to the space midway between the hip crest and the last rib, about three inches to the right of the navel—this application to last about ten minutes. Afterward pass the current over the entire abdomen for five minutes, drying the surface carefully after each application.

"2. Moisten each leg, from knee to ankle, and apply the current freely, for five minutes, to each leg, and dry carefully. The object in view in the application of the current to the extremities is to arouse increased nervous activity in the terminals of the sciatic and saphenous nerves, and their various communications in the pelvic and abdominal regions, accessories to the remarkable histogenetic spaces where is produced the very pabulum of life.

"3. These applications will be repeated each day, at bed time, for two weeks or more, and repeated once or twice afterward each week for three or four weeks, should any evidence of weakness continue. No application of the treatment should be made less than two hours after a meal. Before the application of the electric current drop

fifteen or twenty drops of liquid antiseptic soap over the navel and use vigorous massage for ten minutes, over the entire abdomen, with the open hand, previously placed in warm water and then dried carefully. This massage will take place before each application to the abdomen of the current."

Air as a Therapeutic Factor.—The problem of rendering the bacillary cause of the disease inactive or of destroying it entirely suggests itself as an important subject in the treatment of tuberculosis. The bacillus thrives in lungs which are badly nourished. The less fresh air and rich arterial blood find their way into any particular part of the lung, the better are the chances for rapid growth of the germ. The oxygen in the air and in the blood is the natural enemy of the bacillus. A most important therapeutic indication is, therefore, the necessity of pure oxygen-laden air.

In order, however, to become a powerful therapeutic factor the air must have a chance to enter the lungs, particularly those secreted and distant portions where the bacillus has found lodgment, and thrives. The tuberculous patient's respiratory movements are shallow and do not expand the lungs as they should in order to aerate the infected portions. Consequently it is of importance to adopt measures which will deepen the respiratory movements.

To encourage the patient to breathe slowly and deeply, especially out-of doors, is of course of great value. The effect can be enhanced if additional care is taken to develop the muscular cover of the chest and to render the bony framework more elastic. In suitable cases the effect of procedures of this kind is well-nigh miraculous. These therapeutic methods are classified under the head of mechanotherapy, particularly massage and Swedish movements.

Mechanotherapy and Chest-Gymnastics.—In order to understand the therapeutic value of massage it is proper to acquire the manual dexterity which alone enables us to form any opinion as to the possibilities of mechanical therapeutic methods. To manipulate the muscles of the chest-wall means to increase the blood supply, to develop them, to render them stronger and more active. This, in and of itself, means more vigorous respirations, especially if the mobility of the thorax proper has been increased. These effects should be aimed at in all cases of lung-consumption, especially during the early stages. The *modus operandi* is subject to variation, owing to peculiarities of individual cases. In a general way the following suggestions will be found applicable to most cases:

Practical Directions.—The patient being placed in the dorsal decubitus the operator begins manipulation over the costal border, gently picking up between his fingers a fold of skin and subcutaneous tissue, lifting it from the body structures beneath and gently kneading it between his fingers. Most patients will be found to be "hide-bound," the soft tissues of the chest-wall being very tense and hard to raise. Eventually, i. e., after repeated sittings, the fold of skin will come up with comparative ease. This manipulation requires all possible patience and gentleness. Lack of delicacy would be worse than worthless. Gradually the manipulation is extended over the whole chest. This form of massage may be followed by gentle stroking in a horizontal direction. Each sitting should last from fifteen to thirty minutes, to be repeated after twenty-four hours.

Within a week or two the muscles of the chest will be less tense and probably a trifle fuller. At this juncture exercise of the thorax might be begun. The operator places his flat hand over the right or left side of the patient's chest, making firm and gradually increasing pressure. The result will be a partial immobilization of a portion of the chest. If the patient

is told to breathe deeply, the effect on the unengaged side of the chest will be more or less intense. The patient will expand the unengaged side of the chest more than he would without immobilization of the other side. The operator may alternately place his hand on one and the other side. He may vary the procedure by placing both hands on the lower portion of the thorax over the last three ribs, thus forcing the patient to expand the upper portions of the chest vigorously. In this way the expansive power of the chest can be increased considerably, rendering inhalation of fresh air a therapeutic factor of prime value.

In applying these mechanical methods to individual cases, much depends upon the judgment and the individualizing faculty of the physician. With proper care and judgment an immeasurable amount of good may be derived from these mechanotherapeutic applications.

Sir James Grant emphasizes the presence of a dilated colon in most cases of tuberculosis, especially the young. The treatment of this condition mechanotherapeutically is of the utmost importance for removing the results of imperfect assimilation.

Inhalation of Oxygen and Ozone.—To accentuate the usefulness of chest-gymnastics, many physicians have resorted to inhalation of oxygen and ozone. Theoretically speaking, the inhalation of oxygen ought to be the ideal treatment of tuberculosis. It ought to, as it were, supply the missing link in the chain of vital elements which are antagonistic to the bacillus and its development. More especially ought this to be the case when the expanding capacity of the lungs is being increased by breathing exercises or by thoracic gymnastics.

Clinical experience does not confirm this optimism of the theoretical physiologist. The absorption of oxygen is regulated by the physiologic oxygen-carrying capacity of the blood. This, again, is in direct proportion to the relative number and quality of the red corpuscles. It is plain, therefore, that the forced introduction of oxygen into the air-passages does not necessarily produce an equivalent oxygenation of the blood.

Uncertainty of Oxygen Feeding.—In order to arrive at distinctly physiological, i. e. curative, effects from this method, oxygen must not only be inhaled but absorbed. The blood of a consumptive is wretchedly poor in oxygen, because the elements which carry it are poor in quality and reduced in number. Hence it is clear that the benefits of oxygen-inhalation are to a large extent illusory in character.

Then, again, there is present in the organism that indefinable element which demands bulk or mass of physiologic fuel rather than concentration or extraction. The experiments that have been made with concentrated food-elements as a pure unmixed substitute for food in bulk or mass, apply analogously to the problem of oxygen feeding. The disappointments that have followed these experiments have demonstrated that the human body and the test-tube of the physiologist are alike only in a provisional sense. The lungs demand bulk, not an extracted element. They crave for air, not for oxygen. Yet oxygen inhalation is not altogether valueless. Aside from being a potent psychic factor it gives the chest a gymnastic training and helps the patient to breathe deeply.

Ozone has many ardent advocates. The popularity of certain high tension electrical devices, especially the static machine, has brought ozone rather prominently before the professional mind—unfortunately so, inasmuch as there is really little to recommend the inhalation of artificially produced ozone. The latter is an irritating gas and not usually well borne by the air-passages of the average consumptive. The odor of the gas, not unlike that of chlorine, is disagreeable to many persons. Unless the gas is largely diluted with air, it is very irritating

and can hardly be borne by the average consumptive. If it is administered in a badly ventilated room, the procedure is of questionable value. Ozone is in no way superior to oxygen as an inhalant, while possessing many disagreeable features which oxygen does not.

After all, it is the mechanical act of deep respiration wherein lies the good of any inhalation method. The mechanical act of deep breathing does the good. The substance inhaled (and there are thousands recommended) is the psychic and persuasive factor. A record of chest expansion should be kept.

In connection with the all-important subject of deep breathing I beg to repeat a few words which I have said on this subject in my textbook of "Physical Therapeutic Methods":

Deep Breathing must be enforced, cost what it may. Niemeyer had an ingenious system of making his consumptive patients breathe deeply. He divided them into classes Each class was compelled to go out into the open air and walk slowly until they were tired. Then the members of the class were given a chance to lie down in invalid chairs or hammocks and rest. One of the number had to read aloud until another took his place. Occasionally the whole class had to read, sing, whistle or play on wind-instruments. In this way the lungs were constantly active. The children were allowed to romp over the grounds at pleasure. Those that were too weak were allowed to sit in the open air and make soap bubbles with straws. No patient's lungs were allowed to remain idle. It makes no difference how inhalation is effected. The principle thing is to enforce it. There is a sanatorium in the Black Forest in Germany, which—with due apology to the author of "The Divine Comedy"—has a sign over the entrance to the grounds which reads thus: "Walk slowly and breathe deeply, whoever enter here!"—Sudden changes in the temperature of the inhaled air should be avoided, especially if the bronchial symptoms are well marked.

Light, air and water are, as Flick correctly remarks, the natural enemies of the tubercle bacillus. Having considered light and air in connection with our subject, it behooves us to give some attention to the greatest of the three, water. (Pettenkofer).

Hydrotherapy, in the treatment of tuberculosis, offers a vast field for successful clinical work. Its function is a twofold one: (1.) that of a tonic, constructive, building-up agent, and (2.) that of an effective means to relieve certain concomitant symptoms and meet unexpected emergencies.

What I have previously said in connection with the importance of the skin and its function should be borne in mind with regard to water-treatments. The skin of a tuberculous person should be kept active under any and all circumstances. To accomplish this, rubbing of the skin by means of the hand or a towel, massage (gently stroking and kneading of the back and of the extremities) and vibration (rapid and fine strokes), later on a short cold douche followed immediately by a brisk rubbing with a coarse towel will be found very useful. These comparatively mild methods are employed for the purpose of hardening the patient and enhancing the reactive power of his skin.

After the patient has become habituated to the mild applications, the effect of the latter can be increased by making them stronger and their action on the body more intense. The cold plunge and the cold immersion followed by friction or massage are of good service in many cases. The cold moist-pack (reactive) or the electric-light bath (nonreactive) can be employed as an eliminating agent.

It must be remembered that the clinical picture of the average consumptive case is largely composed of symptoms which are distinctly due to some form of auto-intoxication. The products and derivatives of living and dead bacilli, toxins gener-

ated by broken-down tissues, retained excreta from the alimentary canal, etc., may give rise to a variety of symptomatic manifestations, among which night-sweats, muscular pains, etc., are of common occurrence.

Elimination through the skin should be the keynote of treatment for the relief of these symptoms.

There is no limitation to the employment of water in the treatment of consumption, and it is not necessary to have an elegant modern hydrotherapeutic equipment at one's disposal.

Ease of Using Water Treatments.—The best argument in favor of the universal applicability and usefulness of water as a therapeutic agent is the fact of the very best results being obtainable by the use of the most primitive kind of equipment, the latter consisting of things which every household affords, e. g. sheets, towels, etc. There is no cost or expense involved, all that is required in the successful application of hydrotherapeutic principles being the knowledge of the subject, a reasonable amount of mechanical skill in the performance of the technical part, and some common sense in handling the patient and meeting the exigencies of individual cases.

This sort of practice may be crude in modern times, when an imposing display of apparatus and scientific claptrap seems to be necessary to give any kind of medical work the proper professional flavor. The simple and crude methods of Priessnitz and of Kneipp contained all the science of the subject, and they produced results. I imagine that close imitation of these primitive forms of practice would be an excellent preparation for any beginner who has the ambition to become a master in the performance of hydrotherapeutic work.

The really great results which can be achieved by water in the treatment of consumption, not to speak of any other diseases, would fully compensate any progresssive physician for the efforts of becoming a proficient hydrotherapeutist. Think of how much relief the poor consumptive would derive from greater fitness and resourcefulness of his medical attendant. The reports agree in regard to the value of water treatments in tuberculosis. Freedom from the multitudinous manifestations of autointoxication and marked gain in weight are invariably observed as direct effects of well-directed and correctly applied hydrotherapeutic measures.

OTTO JUETTNER.

Cincinnati, O.

EXAMINATION QUESTIONS

1. Name and describe the local tuberculin tests, giving as many of their designations as are familiar to you. State your experience with them, and your conception of their relative value.

2. Give the principal symptoms to be considered in the early diagnosis of pulmonary tuberculosis.

3. Define "tuberculosis" and "consumption."

4. Give the most important considerations which must enter into the general management of tuberculous patients, as regards their diet, hygiene, work, respiration, rest, outdoor life.

5. What is your experience with creosote or its derivatives in the treatment of tuberculosis?

6. What is your experience with tuberculin or with kindred preparations?

7. What is the proper treatment for cough in pulmonary tuberculosis?

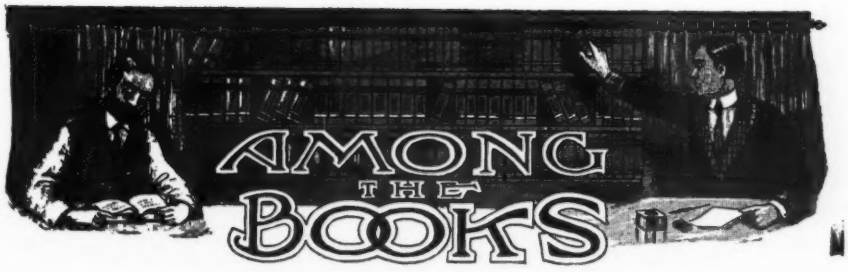
8. What is the best treatment for fever in pulmonary tuberculosis?

9. What is the best treatment for hemoptysis in pulmonary tuberculosis?

10. What is the best treatment for night sweats in pulmonary tuberculosis?

11. How do you treat the anorexia, dyspepsia and other disorders of digestion of tuberculous persons?

12. How do you treat insomnia in consumptives?



SOME IMPORTANT GERMAN PUBLICATIONS ON TUBERCULOSIS

Through the courtesy of A. Stuber's Verlag in Wuerzburg we are enabled to discuss for our readers a number of recent books on tuberculosis that have been published by this firm in Germany. While the modern crusade against the great white plague is world-wide and engages the attention and strenuous efforts of investigators in all civilized countries, we cannot well forget the debt of gratitude we owe to French and German savants, from Bayle and Laennec down to Pasteur and his successors; from Hufeland, Vetter, Virchow to Koch and the theoretical and practical workers of today.

More than ever before medicine is an international, and not a national science, and more than ever before is it absolutely necessary for the practician to keep abreast of the times by studying as far as possible the reports, papers and books of medical writers the world over. Since we are as yet far removed from a realization of an international scientific language (Achilles Rose's attractive proposition to employ the modern Greek language for that purpose being hardly more practical than that of Arcadius Avellanus in favor of Latin), we are obliged to study and keep up at least one other language beside our mother tongue, in order to follow intelligently the acquirements of our brothers in other countries. True, we have our review journals, but we must acknowledge that these are hardly developed to such a high efficiency and accuracy as are those in Germany and France. And in any case, for the student it is of interest to obtain his information at first-hand if at all possible; indeed, in certain contingencies this is practically a matter of necessity. Translations necessarily are of limited value, since they are usually rather late in appearing and do not often reproduce the full information found in the original.

Among the periodicals the study of which in the original we would urge, at least in the case of physicians doing a great deal of tuberculosis work, we may mention the first publications of Koch, in the *Berliner Klinische Wochenschrift* for 1882, and in the *Mitteilungen aus dem Kaiserlichen Gesundheitsamte* for 1884 (vol. 2), which are classics.

Of more recent works, one of the most important ones is the "Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose," by Drs. Bandelier and Roepke (Wuerzburg, 4te Auflage, 1910. Price $2.00). The first edition of this work appeared in the fall of 1907, and was about one-half the size of the present, fourth, edition. The fact that in a little more than two years four editions of the book have been called for shows not only the immense interest of the questions discussed in it but also its excellence. The authors consider carefully the colossal literature of recent years concerning the specific diagnosis and treatment of tuberculosis, in the light of their own extensive experience.

The latest methods of tuberculin-diagnosis appear to grow in favor and to supplant, to a considerably extent, the tuberculin diagnosis by subcutaneous injection. The great difficulty which has not yet been solved

is, that even with the newer methods we cannot distinguish between active and inactive tuberculosis, and that therefore the outcome of the tests cannot give us any definite information in regard to the necessity for active treatment. In the question of the specific treatment of tuberculosis the authors prefer Koch's old tuberculin and his bacillus emulsion, although they describe all or at least most of the many preparations that have been proposed.

The reviewer regrets to state that the work of American investigators has been treated rather slightingly. Vaughan, Pottenger, Von Ruck are just mentioned, and the watery extract of tubercle bacilli is passed over on six lines. We hold that the work done in this country by the authors mentioned, and by many others, is of sufficient importance to deserve consideration.

Wolff-Eisner, "Fruehdiagnose und Tuberkulose-Immunitaet" (2te Auflage, 1909. Price $3.00.), is another important publication of the most recent times. Dr. Wolff-Eisner has first proposed the conjunctival tuberculin-test, which is sometimes called by his name, sometimes by that of Calmette. In his book he discusses very extensively the theory of immunity, attempting to account for the *modus operandi* of the various specific diagnostic and therapeutic measures. The amount of research involved in the making of this book may be judged from the fact that 557 references from literature have been considered. For the tuberculosis physician the work is of the greatest importance.

Ziegler und Krause's "Roentgenatlas der Lungentuberkulose," 1910 (Price $10.00.) forms the second supplement to the "*Beitraege zur Klinik der Tuberkulose,*" one of the most important tuberculosis publications of the day. It is a beautiful work, containing 61 photographic reproductions of x-ray pictures of lungs, both in health and disease. The x-ray offers a valuable supplement to the other diagnostic methods at our command, and enables us to decide on the amount of destruction which has taken place in diseased lungs. Of course this method of examination does not permit a diagnosis between tuberculosis and no tuberculosis, but if we are satisfied of the existence of tuberculous lesions in the lungs, the x-ray examination affords valuable information regarding the extent of the process.

The reviewer would urge those of his readers who have a working knowledge of German to familiarize themselves with the medical literature in that language, not only because much of value can thus be gained, but also because German writers often review the history of problems under consideration to a far greater extent than is done in our country, where we are apt to go right *in medias res.* And yet, as Professor Osler has for years pointed out, the study of the history of medicine is not only interesting but highly important.

AN AMERICAN TEXTBOOK ON "TUBERCULOSIS"

Tuberculosis. A Treatise by American Authors. Edited by Arnold C. Klebs. New York and London: D. Appleton and Co. 1909. Price $6.00.

Among the many new works on tuberculosis which the last few years have produced the present volume, edited by Dr. Arnold Klebs, has been looked forward to with considerable interest. It is a handy volume of some 850 pages of text, written by some of the most noted tuberculosis-physicians in our country. Among the contributors we miss the names of many men of merit and ability, but we are likewise gratified to find such names as those of Edw. R. Baldwin, Lawrason Brown, Edw. Trudeau, all three of Saranac Lake, Dr. Hektoen, Dr. Ravenel, Dr. Von Pirquet, and others.

The different chapters of this work, after a brief historical introduction by Prof. Osler, treat the etiology and morbid anatomy of tuberculosis, its frequency and distribution, symptomatology and diagnosis, prophylaxis and treatment. These are followed by a section on surgical tuberculosis. The most important contributions to the Washington Tuberculosis Congress have been embodied as addenda. The book can heartily be recommended to the general

practician as useful and of value in the management of tuberculous patients, laying especial stress on the chapter on specific treatment, a form of treatment which is being more and more recognized as proper and teleologic, and which is well presented here by Dr. Lawrason Brown.

When, however, the editor says in his preface that a continuous and systematic discussion of the whole subject of tuberculosis in all phases of interest and value to the practician by a single author has become an impossibility, we must take issue with him, and refer in confutation of this claim to the monumental work on tuberculosis by Cornet, which, in its second edition (1907) contains more than twice as much subject-matter as that by Klebs. By this work Cornet has proved that one careful student may singly very well cover the entire subject of tuberculosis in all its important phases and present the discussions on moot questions in readable and usable form.

While the text of Klebs' book is excellent and affords a very good insight into the theory and practice of a disease that is at the present day foremost in all our minds, the reviewer cannot say the same of the subject-index and the bibliography. As for any assistance which the physician may properly expect to derive from the former, and the student and research-worker from the latter, the editor might well have spared himself the slight trouble which he did take, and in so doing might have saved his readers much annoyance and loss of time. We have never seen a subject-index quite so useless. Turning, for instance, to "Tubercle Bacillus," we find references to not less than forty-six pages on which the bacillus is mentioned, but there is nothing to indicate in what connection the subject is treated in each separate place, a mechanical assistance surely to be expected, inasmuch as the index is designed for the convenience of the reader, in order to facilitate ready reference, and not merely to take up space. As for the bibliographic index, the arrangement could not very well be worse if the editor had attempted to give as poor an index as possible. Anybody who has done ever so little research-work will see the omissions and imperfections of this "Bibliographic Index" (save the mark!) without hunting for them, so that we can spare our time and temper in detailed criticism.

BARDSWELL'S "THE CONSUMPTIVE AFTER SANATORIUM TREATMENT"

The Expectation of Life of the Consumptive after Sanatorium Treatment. By Noel Dean Bardswell, M. D., M. R. C. P. New York: Henry Frowde, Oxford University Press. Octavo, 130 pages. 1910. Price $1.50.

The study before us forms a very important contribution to the literature on the vexed problem of how far the sanatorium treatment of pulmonary tuberculosis may be legitimately regarded as a cure for the disease. As is well known, most consumptives, on submitting to regular treatment, especially if in a well-conducted sanatorium, show a marked improvement, which persists for a longer or shorter time, and in some cases proves to be lasting. The change of the mode of life, the comparative freedom from worry, the constant supervision of the attending physician, and the careful regulation of the entire life of the patient, with the addition of favorable climatic and other factors, are bound to exert a favorable influence upon a disease which is peculiarly susceptible to outside influences.

The difficult problem always has been to decide after how long a period after discharge from the sanatorium a patient may be pronounced cured provided he has continued without relapse on resuming his ordinary mode of living. Dr. Bardswell, who is favorably known to tuberculosis physicians through several important publications, presents a study of 241 consumptive patients, treated in the two sanatoria under his supervision and discharged during the years of 1900 and 1905. Of all cases considered there were, in 1909:

Well	99,	or 41	percent
"Alive," but confirmed invalids	15	" 6.2	"
Dead	101	" 45	"
Died in sanatorium	19	" 8	"
Lost sight of	7	" 3	"

The number of cases arranged according to the stage and severity of the disease is too small for any definite conclusions, but the author takes his figures to indicate that a permanent recovery may be looked for from sanatorium treatment in from 70 to 80 percent of cases of early consumption, in from 40 to 60 percent of cases of moderately advanced disease, and in some 8 to 10 percent only of those suffering from the disease in its much-advanced stages.

It is not here the place to enter largely into the questions involved. Dr. Bardswell's book must be read for a true appreciation of the information given. That this is important, not only for tuberculosis physicians but also for the general practician, as well as from a socioeconomic standpoint, should not need to be pointed out.

BURTON-FANNING'G "OPEN AIR TREATMENT OF PULMONARY TUBERCULOSIS

The Open-Air Treatment of Pulmonary Tuberculosis. By F. W. Burton-Fanning, M. D., F. R. C. P. Second Edition. New York: Paul B. Hoeber. 1909. Small octavo, 182 pages. Price $1.50.

This little book, first brought out four years ago, is recognized as a guide in the open-air treatment of consumption, which is, at present, the treatment most in vogue and will probably remain so. While primarily intended for the sanatorium physician, the author takes up more especially in the last chapter, the important question of the open-air treatment at home. This is of the greater value to the practician, because only a small percentage of consumptives can, or for that matter, should be sent away from home for treatment. We feel safe in recommending this little manual to our readers for careful study, assured that it will repay both time and money expended manifold.

BARDSWELL AND CHAPMAN'S "DIET IN TUBERCULOSIS"

Diet in Tuberculosis, with Cost of Foods and Their Preparation. By Noel Dean Bardswell, M. D., M. R. C. P., and John Ellis Chapman, M. R. C. S., L. R. C. P. New York: Oxford University Press, American Branch. 1910. Price, $1.00.

This excellent and useful little dietary, (62 pages, paper cover) was written by the authors of a larger book, entitled "The Principles and Economics of Diets in Tuberculosis," and published in 1908. The authors discuss in a simple and lucid manner the principles that should guide us in the highly important dietetic management of tuberculous patients, considering the question of forced feeding in an eminently common-sense manner. They then take up the question of diet in patients belonging, respectively, to the leisure classes, the working classes, those in sanatoria, and including the dietetic treatment in tuberculosis of the various organs. The book closes with directions for the preparation of certain foods useful in the treatment of anorexia, high fever, dysphagia, etc., and forms in its entirety an exceedingly valuable guide for the general practician as well as for the specialist.

THOMPSON'S "CONSUMPTION"

Consumption, Its Prevention and Home Treatment. A Guide for the Use of Patients. By Hyslop Thompson, M. D., Medical Superintendent, Liverpool Sanatorium. New York: Oxford University Press. 1910. Price $1.00.

This little volume of 72 pages is, as its title implies, intended for the use of the patients, and affords valuable and important information on the causation of tuberculosis and consumption, and on the management of consumptives. The present crusade against consumption is carried on not only in the direction of attempting a cure of the disease but of preventing its spread. The author shows clearly the great importance of environment over that of heredity and teaches how to avoid the communication of the disease. The directions for patients are characterized by common sense and are excellent withal. The book should be read by physicians themselves, and copies may

profitably be given to their patients for their guidance.

SENATOR AND KAMINER'S "MARRIAGE AND DISEASE"

Marriage and Disease. Being an Abridged Edition of "Health and Disease in Relation to Marriage and the Married State." Edited by Prof. H. Senator and Dr. S. Kaminer. Translated from the German by J. Dulberg, M. D. New York: Paul B. Hoeber. 1909. Price $2.50 net.

"While religions and legislatures have, from very early times, endeavored by laws to regulate the conditions arising from the married state, with a view to increasing the welfare of whole nations or of the entire human family, the question of health in reference to marriage has hitherto attracted but little attention. What effect the physical state of husband and wife has upon each other or upon their union, and *vice versa*, what influence marriage exercises upon the life and health of the married couple or of their descendants, and even on the welfare of entire families or communities, these points have as yet received, outside of medical circles, and especially at the hands of legislative bodies, either no recognition at all or not as much as is commensurate with our present knowledge and views."

This passage from the Introduction to the book before us, written by Professor Senator, will indicate its *raison d'etre*. In twenty-seven articles some of the foremost leaders of medical thought in Germany have discussed the many phases of the married state, as it may influence not only husband and wife but also their offspring.

There can be no discussion concerning the timeliness of such a book, and the names of the authors are a sufficient guarantee for the dignified and scientific manner in which the many important questions connected with the problem of marriage and disease are discussed. It would lead us entirely too far to reproduce even abstracts of the opinions and advice advanced. The question of the influence of heredity on the production of disease, which had almost been shelved in the first period of our modern bacteriologic era, has again been brought into prominence and under discussion. The subject-matter of this book is so important, not only sociologically, but even more from the direct standpoint of the family physician, that we urge our readers to read and study the work carefully.

The translation is well made. The reviewer confesses his regret that the original should have been considerably abridged; but as the translation originally was intended as a popular edition, this was unavoidable. Personally we prefer the original, but for the busy practician the salient points are excellently gleaned and presented in readable form.

"REPORT OF THE BUREAU OF ANIMAL INDUSTRY"

The Twenty-Fifth Annual Report of the Bureau of Animal Industry for 1908 (Washington, 1910) contains four important papers on the subject of tuberculosis. Dr. A. D. Melvin discusses the economic aspect of federal inspection of cattle slaughtered for consumption, and points out the enormous economic loss sustained by the owners of condemned animals. He says, justly, that the State should compensate, at least in part, the persons whose cattle are condemned. In spite of these losses, which indirectly affect the prosperity of the nation, the importance of meat inspection and of eliminating the carcasses of tuberculous animals from the market supplies is of the highest, and the present crusade of education in regard to this question is to be continued.

Dr. E. C. Schroeder discusses the relation of the tuberculous cow to public health, and claims that the theory of the acquirement of tuberculosis through the infection by inhalation is not supported by sufficient evidence, but that the ingestion of infected foodstuffs is a far more probable cause.

Dr. John R. Mohler writes on the causation and character of animal tuberculosis and federal measures for its repression, and, together with Dr. Henry J. Washburn, on

the transmission of avian tuberculosis to mammals.

All the papers cited are of more than purely scientific interest, presenting, as they do, not only facts of importance for the physician to know in his daily work, but also facts relating to the economic and sociologic aspect of the tuberculosis problem.

Reprints of the papers mentioned can be had by applying to the Chief of the Bureau of Animal Industry, Washington, D. C., or to the Superintendent of Documents, Washington, D. C., the latter supplying all publications of the United States Government at a nominal charge.

STARR'S "NERVOUS DISEASES"

Nervous Diseases, Organic and Functional. A Textbook of Neurology. By M. Allen Starr, M. D., Ph. D., of the Medical Department of Columbia University. Third Edition, thorougly revised. Illustrated with 300 engravings and 29 plates in color and monochrome. New York and Philadelphia: Lea & Febiger. 1909. Price $6.00.

In this book of some 900 pages of large size and closely printed we have an account of the anatomy, physiology, pathology and diseases of the nervous system as understood, taught and treated at the present time by an author who devotes his life to the subject and who has facilities for practising his specialty not surpassed anywhere in the world. The book must be very helpful to the progressive physician, especially so as the author does not neglect the treatment of nervous diseases, either medical or surgical.

"THE INTERNATIONAL MEDICAL ANNUAL"

The International Medical Annual. A Yearbook of Treatment and Practitioner's Index. 1910. New York: E. B. Treat & Co. Price $3.50.

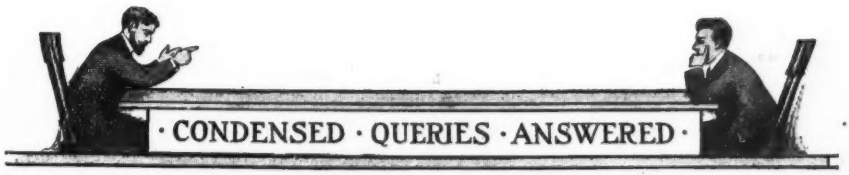
The twenty-eighth volume of this Annual forms a worthy link in the chain of review volumes which the editors and publishers of this well-known series offer to the medical profession. The Annual occupies a position that in many respects is unique, in that it offers not a mere accumulation of literary facts, but that the acquirements of the past year are, after the most careful and critical selection, presented in a form which is of immediate value and availability to the practician as well as to the research worker.

The reviewer considers one passage in the preface significant. The editor says: "The subject of therapeutics, which languished almost to extinction some years ago, is now becoming an ever-widening field of study. Formerly we discussed the "action" of drugs, now we speak of the "effects" of drugs and the "action" of the organism. The source of energy has been transferred. All the new therapeutic methods have for their object the cultivation of vital energy or its direction against particular toxic agents created from within or admitted from without."

CLINICAL MEDICINE has stood for years for positive therapeutics, and during all this time we have insisted upon the important role played by autointoxication in the causation of pathologic processes. The remedies proposed for the relief of such processes are entirely in accord with those which have always been advocated and preached by us.

We would, however, extend the ideas voiced by the editor and not expect too much from the new gospel of biological treatment of disease. The diseases "where drugs have failed" are not as numerous as one might think, provided the drugs employed have been of sufficient purity and certainty, and have been administered with a sufficient degree of knowledge concerning their actions and indications. We see a decided awakening to positive drug-therapy in the signs of the times, and while, as is natural, the advances of surgery and in vaccine-therapy occupy a considerable space, the drug-treatment of disease has received its due attention.

"The International Medical Annual" forms a handy octavo volume of 762 pages, well indexed, and in part beautifully illustrated. It deserves to find more extended favor with physicians.



PLEASE NOTE

While the editors make replies to these queries as they are able, they are very far from wishing to monopolize the stage and would be pleased to hear from any reader who can furnish further and better information. Moreover, we would urge those seeking advice to report the results, whether good or bad. In all cases please give the number of the query when writing anything concerning it. Positively no attention paid to anonymous letters.

QUERIES

QUERY 5590.—"Oil of Turpentine as an Intrauterine Application." J. K. S., South Carolina, writes: "If I am not mistaken, I once read in THE CLINIC of the great benefit of oil of turpentine in the treatment of an infected uterus, either as a prophylactic or curative agent, or perhaps both."

Oil of turpentine has been recommended in infections of the endometrium and has proven a fairly safe and effective therapeutic agent. It is absolutely essential that the pure oil alone be used, but not too freely. Many successful gynecologists have advised the swabbing of the uterus with pure oil of turpentine after cureting. At the present time, we think, however, we have at command better remedies. The danger from the oil lies, of course, in the possibility of absorption. Iodized phenol may be applied, after irrigation, on a cotton-wrapped probe, and oil of turpentine used later, determined by the degree of infection. A strip of gauze should always be packed lightly into the uterus after such application and the end left projecting into the vagina, drainage being essential.

However, in many instances it is not necessary to invade the uterine cavity. In such cases thorough vaginal irrigation with a peroxide solution, followed by applications of oil of turpentine and olive oil to the os will suffice. Very hot antiseptic douches, preferably retained, should be ordered, and strips of gauze smeared with vaseline and dusted with a suitable antiseptic powder packed snugly into the fornices. An antiseptic oil containing camphor, thymol iodide, carbolic acid, menthol, oil of tar, oil of cinnamon, and oil of eucalyptus in an olive and cottonseed oil base has given good results when applied to the uterine lining in endometritis, salpingitis, etc. The efficacy of the copper electrode and galvanic current in such conditions is well understood, of course.

It is important that special pains be taken to secure the rectified oil of turpentine, and it should be used pure. This oil is a valuable and very much neglected agent. It is one of the best remedies for ulcers and infected lesions at the disposal of the physician.

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QUERY 5591.—"Neuritis." C. R. D., Michigan, is treating a case (of eight years' standing) of neuritis of the musculospiral nerve which was once resected and sutured. The pain returned, and it prevails over the area of resection, which led to the belief that sclerotic changes have taken place in the resected region. The condition is attended with general neurasthenia. Guaiacol, ethyl chloride, unguentum Bengue, and other local measures have proved of no avail. It is now in a passive, noninflammatory state. Our correspondent asks: "Would a solution of osmic acid injected between the nerve and its sheath, or close to the nerve, accomplish the desideratum without injury to the nerve?"

If you have a wall-plate, try the sinusoidal and galvanic currents. Injections of osmic acid have been recommended highly and almost as vehemently condemned. Bear in mind, Doctor, the necessity, in all these cases,

for intestinal disinfection. An underlying acidemia is usually present. Nuclein hypodermically with laxative salines, and antacids if the urine shows hyperacidity or indican, and the sulphocarbolates to effect, with gelseminine and colchicine, suggest themselves. We should alternate week and week about with the triiodides or calx iodata.

What about the possibility of venereal taint? Applications of epsom-salt solution will unquestionably prove beneficial. Apply compresses as hot as can be tolerated. Chloroform on lint locally has been suggested, and a good preparation of cannabis indica, alternated with atropine and morphine (or hyoscine, morphine and cactin), controls the pain until constitutional treatment removes the cause. The galvanic current is, however, almost essential; cinchonidine salicylate has recently been highly lauded, but we believe that the treatment first outlined by us, together with the use of the galvanic current and epsom-salt solution, will give results.

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QUERY 5592.—"Cactin *vs.* Strychnine and Digitalin in H-M-C." E. G. H., Ohio, inquires: "If the insoluble ingredient of H-M-C is the caffeine or cactin, could not this be replaced by a strychnine salt and the alkaloid of digitalis?"

Cactin is sufficiently soluble for all practical purposes and proves unobjectionable. Caffeine is contained only in the "modified" formula, intended particularly for internal use; it also is soluble in hot water; the arsenate has been selected for this reason. All the ingredients, therefore, may be regarded as soluble in hot water.

Digitalin would not prove a satisfactory substitute for cactin. Study the action of the two drugs and you will readily recognize the objectionable features of the latter. Strychnine is particularly undesirable. Relaxation is desired by the surgeon, not rigidity. The combination of morphine, hyoscine and cactin has proven almost an ideal one, and the formula was not devised without an infinite amount of research work, —gitalin, sparteine, strophanthin, strychnine, etc., having being tried out thoroughly and one by one discarded.

The remarkable results secured from the use of hyoscine-morphine-cactin are not secured from the administration of hyoscine and morphine alone; neither will hyoscine, morphine and digitalin, or hyoscine, morphine and strychnine produce similar effects. As a matter of fact, it is undesirable to disturb even the relative proportions between the hyoscine and morphine, an exact "drug balance" seeming to obtain, and the physiologic results secured are different entirely from those following the administration of other combinations.

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QUERY 5593.—"Marsden's Paste *vs.* Paquelin's Cautery." J. A. B., Indiana, on looking over his old journals, noticed an article on Marsden's paste in cancer. The writer, however, condemned its use "as brutal," saying, "more can be done in five minutes without pain with the Paquelin cautery under cocaine." Our correspondent desires us to tell him what this paste is made of. He says he has two cases of cancer which will not submit to operation.

Marsden's paste often is efficacious and if applied to small epitheliomas far from "brutal." The following is the formula, and the technic recommended by the present writer:

Take arsenous acid, 1 dram; powdered acacia, 1 dram; cocaine hydrochloride, 2 grains; mix well, add a small quantity of water and rub to a cream.

Curet the growth thoroughly and apply the paste on a piece of rubber plaster, after oozing has ceased. Leave *in situ* from eighteen to thirty-six hours. It may be necessary to make another application. Occasionally morphine, hypodermically, must be given to control excessive pain. Upon removing the plaster you will find a black eschar surrounded by an inflamed area. Apply hot poultices until this slough comes away, then dress as any other clean wound.

Paquelin's cautery is an instrument which may be procured from any surgical supply house. The surface of the lesion to be treated

should be cocainized before the cautery-point is applied.

The improved thermocautery consists essentially of a handle of nonconducting material to which is attached a hollow platinum point; the whole being connected with a double air-bulb and reservoir so that after the point has been heated in the flame of a spirit lamp a stream of benzine vapor can be forced into the hollow point where by the combustion of the vapor caused by its contact with the heated metal a uniform degree of incandescence can be maintained.

A self-blowing cautery-lamp is now on the market, also a very convenient pocket thermocautery, the latter being comparatively low-priced, and also compact and portable. It consists of a benzine-bottle, alcohol-lamp, handle with cut-off, double bull, and two points; one a regular cautery-knife, the other a perforating needle, about 40 millimeters long and 4 millimeters in thickness at the point.

The description of the Paquelin and other cauteries can be obtained from any instrument house. We suggest writing to Truax, Greene & Co., or to Sharp & Smith.

Doctor, there are cancers and cancers. At the present time it is the opinion of the profession that early operation is essential in practically every instance. That a constitutional dyscrasia exists is unquestioned and it is probable that the man who recognizes and is able to treat correctly this disorder thus bringing about a systemic condition unsuitable to the development of cancer has brought his patient to a point where removal of the growth will result in a cure. It is useless to extirpate a cancerous tumor if the systemic disorder is not corrected. Skin cancers (epithelioma) may be cured by proper systemic and local treatment, but it is worse than useless to attempt to benefit carcinoma by the internal exhibition of drugs.

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QUERY 5594.—"Bromidrosis." J. S. B., Pennsylvania, asks: "What can you suggest for a case of badly sweating feet, with much odor. The girl will have to lose her place unless we can find a remedy."

We suggest that you adopt the following treatment in the case of bromidrosis proving so rebellious:

First of all eliminate freely. Blue mass and soda with iridin and podophyllin half-hourly for four to six doses every third night will answer nicely; the next morning give a copious saline.

Have the patient sponge the entire body at least twice a week with a carbolated solution of epsom salts (epsom salt one ounce, water three pints, carbolic acid twenty minims. Soak the feet for five minutes each night in a solution of formalin; commercial (40 percent) solution one dram, water two quarts. Before putting the feet into the solution wash thoroughly with any good detergent soap. Dust into the stockings one of the following powders: (1) boric acid, six drams; acid salicylic, one dram; talcum q. s. to make two ounces; (2) tanniform three drams; boric acid, three drams; talcum three drams. The powder should be dusted freely between the toes.

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QUERY 5595.—"Urinary Analysis." A. E. W., Manitoba, wishes to know of the best book published for the general practician dealing with chemical and microscopic examination of urine, with clinical significance.

Purdy's "Urinary Analysis" is perhaps as useful a book for the general practician as any published. Ogden's "Clinical Examination of the Urine," published by the W. B. Saunders Co., is another excellent volume. Either work will serve the purpose fully.

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QUERY 5596.—"Soft Corns." A. B., Wisconsin, has a friend (and patient) who has been troubled for some months with what he calls a "soft corn" on the sole of his foot at the base of (between) the great toe and the next one. The soreness is a great bother to him as he is compelled to be on his feet almost constantly and nothing he has so far used has had any effect on it. The doctor is "very anxious to help him" and asks for suggestions as to treatment whereby he can expect a permanent cure.

When dealing with socalled "soft corns," bear in mind the possibility of keratoderma, tylosis plantæ. We have here a circumscribed keratoma springing from an apparently normal skin, surrounded by a red areola. Such conditions are usually associated with certain neuroses or vague constitutional disturbances. The possibility of syphilitic keratoma must be considered. A simple callus or corn, whether "hard" or "soft," is essentially a result of external irritation from pressure or friction. Badly fitting shoes are the most common cause. Such callosities occur usually over the bony prominence of the bursa and spring from apparently normal skin.

The soft corn is due to maceration of the thickened horny layers by retained perspiration. The treatment calls, first, for removal of the cause. Properly fitting shoes should be worn and pressure removed by the use of a felt ring over the affected area. Soak the foot in a hot solution of washing soda for fifteen or twenty minutes. Remove the dead macerated cells by scraping with a curet or dull knife blade, then apply salicylated collodion (30 grains of salicylic acid to the ounce of flexible collodion) and repeat the application daily for a week, then again soak the foot. The greater part of the callosity will come away together with the horny plug, or core.

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QUERY 5597.—"Anasarca. Prostatitis, Croton Oil." A. A., Washington, asks as follows: "What preparations are useful in anasarca? A physician here advocates the use of potassium bichromate in prostatic troubles. Have you had any reports on the use of this drug in the above cases? Does croton oil when given in certain combination act similarly to castor oil?"

Elaterin and apocynin are the most effective remedies for anasarca, although, of course, this condition is a symptom and it is essential to recognize and correct the underlying pathologic cause. Blue mass and soda with jalapin may be given half-hourly for four to six doses at night two or three times a week, elaterin, 1-32 grain, may be given hourly until watery stools are secured, the effect being maintained with apocynin, 1-6 to 1-3 grain, four times daily.

Potassium bichromate has never been used by us in prostatic conditions; neither have we heard it recommended in such conditions. The effect of the drug, when taken internally, is said by close observers to be confined to the upper respiratory tract. It has, however, been recommended in inflammatory conditions of the intestinal mucosa, chronic diarrhea, and some forms of dyspepsia. We doubt that this chemical exerts any marked influence upon the prostate gland. We would suggest a trial of chromium sulphate in your prostatic cases. It has given decidedly beneficial results in many instances reported.

Croton oil is a violent cathartic. It is sometimes added in small proportion to castor oil to enhance the effect of the latter, one or two minims of croton oil being added to one ounce of castor oil. Occasionally, when very prompt action is desired, one or two minims of croton oil are given upon the tongue. This, however, is unusual and emphatically an "emergency procedure." Don't make a routine practice of it.

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QUERY 5598.—"Nausea Caused by Veratrine." E. T. A., Oregon, wants to know why the defervescent formula occasionally nauseates even in reduced dosage.

This formula contains aconitine, digitalin and veratrine. Veratrine not infrequently does cause nausea. The defervescent combination therefore, even in the milder form, may disturb the stomach under certain conditions. Even digitalin may irritate the gastric mucosa. One safeguard is to exhibit a little menthol with the defervescent. If menthol is not at hand, a few drops of essence of peppermint may be given. Menthol in gr. 1-12 tablets should be in every medicine case. They are very convenient and should be used to "settle" the stomach more often than they are. A calomel with aromatics tablet every fifteen minutes for five or six doses proves effective in mild cases. An effervescent saline may follow to good advantage.